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Institute of Paper Chemistry 15 Years Old

Started February 1, 1930, By Nineteen Individual Wisconsin Mills This Post Graduate School For the Study of Paper Chemistry and Technology Has Made A Splendid Record — Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., February 12, 1945—The Institute of Paper Chemistry, which is situated in this city, on February 1 observed the fifteenth anniversary of the start of classes, the first group of three students having begun study February 1, 1930.

Classes were begun in examination rooms of the Lawrence college gymnasium. Today the Institute buildings and equipment represent a cost of $1,700,000.- Its basic purpose is the training of scientists for the pulp and paper industry, but has seen carried out through its facilities 1,100 research projects. It is also playing a major part in the war effort. The latter cost-free projects may not be detailed at present. Staff members' services have been given to the war agencies.

The Institute, a graduate school devoted to the study of pulp and paper chemistry and technology, was organized in the fall of 1929, through the efforts of Lawrence officials under the leadership of Dr. Henry M. Wriston, then the president of Lawrence but now the head of Brown University, and Wisconsin pulp and paper mill executives.

Nineteen individual Wisconsin mills backed the Institute to the extent of $40,000 a year for a trial period of five years. At present about 100 mills from all sections of the United States are making contributions.

Ideal of Institute Has Been Sound

Westbrook Steele, executive director, who has been with the Institute since its inception, declared that the last five years have proved that the idea, ideal and conception of the Institute have been sound. To emphasize the vital part it is playing, the government recently granted priority to the Institute to erect a new mill-type building at a cost of about $100,000 to carry on work in the development of containers.

This year's budget is about $600,000. Matriculants total 225 during the Institute's history, the war having interrupted the study of a number of recent students. Doctor of philosophy degrees have been awarded to 82 and master of science degrees to 148 graduates by Lawrence College, with which the Institute is affiliated. The new class, which will begin study soon, will be a small one because of the war.

More than 90 per cent of the research projects during the last year have been directly related to war production work.

Originally the Institute staff numbered three, but it has grown to 150. Ninety per cent of the production of one state was represented at the start; today it amounts to 70 per cent of the nation's. Executives of the pulp and paper industry constitute its board of trustees. They represent the member mills as holders of the property of the Institute and form the group which chooses the officers and staff which determines general policies.

Pollution Not Fully Solved

Despite the fact that paper mill owners in Wisconsin have cooperated for nearly a generation and have spent about $5,000,000, the problem of paper mill waste pollution in the state's streams has not been fully solved, according to Adolph Kanneberg of the state committee on water pollution, and L. F. Warrick of the Wisconsin State Board of Health.

The two discussed the work and objectives of the pollution agency at a recent budget hearing before the state legislature's joint committee on finance.

They said that paper manufacturers have solved the problem of fiber waste leaking into streams, with resultant economy in the cost of manufacturing paper. At one time mills were losing up to 18 per cent of their raw materials because of fibrous materials going into rivers.

But they have not yet solved the problem of sulphite pollution of streams, although they have financed an intensive cooperative experimental program at the Institute of Paper Chemistry at Appleton.

Messrs. Warrick and Kanneberg asked for money to hire a staff of professional workers to engage in the study of other pollution problems, including algae control on resort lakes and bathing beaches.

Reach Agreement at Menasha Mill

The International Brotherhood of Papermakers (AFL) and the George A. Whiting Paper Company, Menasha, Wis., have reached an agreement on terms of a contract involving wage increases and vacation pay, pending approval by the War Labor Board, E. B. Lambton, regional director of the union, announced last week.

Employes, 62 of whom are affected under the contract, approved the stipulations at a meeting at the Menasha Labor hall on Sunday, February 4.

The agreement involves a general wage increase of 3 cents an hour; 44 hours of vacation per year with pay for those employed from one to five years and 80 hours for those over five years; wage adjustments in several classifications; six holidays a year; and a maintenance of membership clause. If WLB

(Continued on page 12)

Advocates Radical Changes in Taxation

Attitude of Successive Federal and Provincial Governments Held Responsible For Appalling Wastages In Canadian Forests—Cost of Processing Logs By Pulp and Paper Industry Makes Good Showing.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 13, 1945—A revolution in taxation methods as applied to the forest industries, with special reference to the pulp and paper industry, has been advocated in an address before Canadian manufacturers by Major General Howard Kennedy. He believes that many of the evils which bring about appalling wastages in Canada's forests, and which have resulted in the present intensive campaigns for forest conservation, have at their root the attitude of successive provincial governments who, owning as they do 90% of the Dominion's forests, look upon these forests primarily as a source of government revenue, while successive federal governments have taken the attitude that forests are primarily of provincial concern, the monies voted by them for forestry reflecting this attitude. Both groups, he says, are fundamentally wrong. Revenue should come from the industrial prosperity created by the forest industries rather than from the sale of raw material to industries.

As for the federal government, he says this government does not own the farms of Canada any more than it owns the forests. Yet while the export of farm products in a normal year amounts to a bit more than double the value of the export of forest products, the federal expenditure on agriculture amounts to more than 25 times the expenditure on forestry. Surely, he said, the federal government should be as deeply interested in the perpetuation and prosperity of the forests and their dependent industries as they are in agriculture. He claimed that both federal and provincial governments should alter their attitude on this question, and recognize that healthy forests are vital to the welfare of the nation, and that the role of the forests in Canada's economic and social life lies in providing: (a) continuing employment for our people; (b) protection for our watersheds; (c) attraction to tourists; (d) suitable environment for the wild life of the country and a place for recreation for our people.

Fires and Pests Preventable

He declared that 95% of forest fires were preventable, while as for insect pests, they resulted from unwise cutting methods or abnormal weather which threw the forests out of their natural balance and permitted insects to multiply to epidemic proportions. Neither of these destructive forces was an act of God. It was the result of negligence, and basically was traceable to the wrong attitudes of federal and provincial governments. With no better soil or climatic conditions, he said, Scandinavian countries were getting twice the annual yield per acre of forest that Canada was getting, and with a proper governmental approach to the problem, numerous studies already made here by expert foresters indicated that with sound forest management our annual yield might approach 40 cubic feet per acre, or more than 2½ times our present annual depletion.

"If we continue as we have done in the past," he warned, "and allow insects and flies to annually ravage our forests, ably assisted by a rather numerous group of irresponsible woods operators, then I can only remind you that the deserts which Montgomery and Rommel fought over in Cyrenaica last year were once the source of timber and grain supply of Southern Europe. With the timber gone, the farms also dried up. The ancient Africans probably thought that their forests were inexhaustible, too. Let us not have our succeeding generations bemoan the fact that we in this generation similarly failed in our trust."

Some Surprising Revelations

Much attention is being attracted here to some surprising revelations just made as to the far great value per log created by the pulp and paper industry as compared with any other forest industry. The revelations were contained in briefs of B. C. pulp and paper companies presented to a Commission of Inquiry into the forest resources of British Columbia. These briefs showed that, based on figures for 1942, the processing of logs by the pulp and paper industry created a gross value of $58.50 above the cost of the logs per 1,000 feet, while all other branches of the forest industries had an added value of only $15.00 per 1,000 feet. Further, the briefs also showed that, comparing the ratio of capital invested in the number of employees in six leading B. C. industries, pulp and paper led the list with an investment of $16,295 per employee. Next was petroleum products with $12,256 per employee and slaughterhouse and meat packing third with $7,667. The figures quoted were those of the Dominion Bureau of Statistics. The pulp and paper companies called for a progressive, far-sighted and permanent provincial forest policy. Assurance of the industry's sincerity in a search for a workable forest policy was given, supported by the fact that the pulp and paper companies in the province had investments totaling $70,000,000 and that such investments were valuable only as long as the supply of raw material was available at a cost which would permit processed products to be sold at competitive prices in the world markets.

Newsprint from Investors' Viewpoint

The continued leadership of newsprint stocks on the Montreal Stock Exchange has resulted in an interesting study of such stocks being issued by a leading investment house. This states that for the last four years the entire world has been "newsprint hungry" and declares that there is every indication that this condition will continue for a long period. Not only the United States, but the remainder of the civilized world, it states, will show a greater demand for newsprint.

In Europe, it points out, for many years prior to the war the press had been muzzled through dictatorships and other strict political pressures. This resulted in the closing down of hundreds of newspapers, and with the liberation of Europe nothing will be more welcome than a free press and the ability to read freely news and other items of general interest.

With regard to possible competition through expansion of the industry, the study points out that the building of new mills will not, in the future, be quite as simple as was the case in the past. Suitably located timber areas are not as easily obtained, and, in view of the many uses of wood, the value of timber areas has advanced very materially, and wood pulp, formerly used mainly in manufacturing paper, is now used for scores of other purposes.

Container Board Committee Meets

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 14, 1945—Proposals of the War Production Board Paperboard Division to increase the production of container board, particularly V-box board, and keep all mills in full operation were endorsed in principle by members of the Containerboard and Fiber Box Industry Advisory Committees at a recent meeting here, W. P. B. said today. In this connection, proposed amendments to container board Order M-290, including means for conserving kraft pulp, plans to insure a more equal distribution of container board so that all authorizations for board could be filled, and changes intended to provide more flexible operation of the order were discussed by members of the committee and WPB officials.

Present V-box allocations for the first quarter were reported as running at the rate of 260,000 tons by Philip F. Paul, of the Paperboard Division, who was Government presiding officer at the meeting.

Complaints from the Navy about the failure of certain types of fiber containers to stand up under service conditions were registered. The assistance of the paper board and container manufacturers is necessary in improving these products, WPB said. One committee suggestion was that the board to be used in producing these boxes be standardized at the manufacturing level so as to comply with Naval specifications and assure better performance of the finished boxes.

Members of the committee indicated their willingness to cooperate and asked for the new board specifications reported as being more exacting than the present requirements in order to insure stronger and more stable boxes.

Reports on the collection and use of waste paper indicated that additional efforts are needed to meet the goals required for maintaining paper board production at its maximum expectancy.

The next meeting will be held March 6.

Chain Belt Issues Bulletin

The Chain Belt Company of Milwaukee announces a new bulletin No. 462 descriptive of Rex apron and pan feeders and conveyors. Rex apron and pan conveyors are used for handling coal, coke, ore, cement, rock, chemicals, bulk parts and many other materials. The bulletin contains design details, cross sections, capacity tables and specifications tabulated for quick comparison.

In addition to apron and pan conveyors, Chain Belt Company manufactures a complete line of other conveying and bulk handling machinery, process equipment and more than 2,000 sizes and types of chain belts for the handling of materials, transmission of power, and timing of operations.

Bulletin No. 462 is available by writing Chain Belt Company, 1600 W. Bruce Street, Milwaukee 4, Wis., or the branch office nearest to you.

Wood Pulp Production in 1944

The production of wood pulp in the United States was 10,086,890 tons in 1944, while consumption in the manufacture of paper and paperboard amounted to 10,495,734 tons in the same period, the Bureau of the Census reported today in announcing preliminary figures. It is noteworthy that, despite labor shortages and other handicaps imposed by the war, the domestic industry was able to make available a substantially greater over-all supply of wood pulp in 1944 than in 1943. The information was compiled from reports received by the Pulp Allocation Office of the War Production Board.

The most significant increase in production occurred in unbleached sulphate wood pulp. However, the production of all other grades increased, except sulphite wood pulp in which small declines occurred.

Consumption of wood pulp in the manufacture of paper and paperboard declined slightly during 1944 as compared with 1943. The largest decline took place in sulphite pulp and was about evenly divided between the bleached and unbleached grades. On the other hand, consumption of unbleached sulphate wood pulp rose substantially, reflecting the increased production.

U. S. PRODUCTION, AND CONSUMPTION 1944 AND 1943
(Tons of 2,000 pounds)

Type of wood pulp	Production		Consumption in the manufacture of paper and paperboard	
	1944	1943	1944	1943
All types	10,086,890	[3]9,657,914	10,495,734	[3]10,612,772
Groundwood	1,357,681	[4]1,556,810	1,730,650	1,768,016
Sulphite fiber, total	2,386,149	2,436,502	2,518,590	2,891,719
Unbleached	862,928	883,306	1,241,966	1,449,419
Bleached	1,523,221	1,553,196	1,276,624	1,442,300
Sulphate fiber, total	4,548,810	4,235,724	4,603,318	4,430,098
Unbleached	3,739,602	3,486,535	3,733,486	3,583,851
Semibleached	144,262	147,040	156,085	163,066
Bleached	664,946	602,149	713,747	683,181
Soda fiber	412,755	418,868	418,442	455,892
Semichemical, off-quality, screenings and miscellaneous	540,380	405,309	585,126	457,469
Defibrated, exploded, asplund fiber and similar grades[2]	641,115	[4]604,701	639,608	[3]609,578

[1] Data for 1944 are preliminary. Data cover all known mills and were compiled from reports received by the Pulp Allocation Office of the War Production Board.

[2] This classification covers pulp manufactured by such recently developed processes as wet refining, steam explosion and dry pressing in hammer mills. The pulps produced by those processes are used in the manufacture of high strength papers (such as building papers) and boards.

[3] Revised in accordance with corrected reports received from three companies.

[4] Revised in accordance with a corrected report received from one company.

New Paper Mill for Pawtucket

[FROM OUR REGULAR CORRESPONDENT]

PAWTUCKET, R. I., February 12, 1945—The Four-Dee Realty Company, a newly organized concern, has purchased the 4-story brick building, formerly on Manville-Jenckes property, from the Barton Bonded Warehouse Co., Inc., according to deeds filed recently at Pawtucket City Hall. Revenue stamps indicated an approximate purchase price of $55,000.

The new owners expect to place 2000 employes immediately upon opening of the postwar period, Miss Hope Durfee, secretary of the Four-Dee Realty Company, said yesterday. "Establishment of these industries in Pawtucket will be a tremendous cushion for employment in Pawtucket during the change from war to peacetime industry.

"Included in these plans is the establishment of a paper mill, the first of its kind to be established in Rhode Island. The capacity of the paper mill will be 40 tons daily, all of which will be used in the Blackstone Valley area," Miss Durfee stated.

Paper Diversion To Europe Is Criticized

Chicago Paper Men Say This Further Shortens Supply For This Country and Increases Tensity of Domestic Situation—Paper Salesmen Hold Annual Meeting At Hotel Sherman—Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., February 12, 1945—The Chicago paper market is having considerable to say about the diversions of newsprint and other papers to foreign ports as a part of the lend-lease program. Despite the pros and cons of the situation the fact remains that all these developments further shorten the supply for this country and increase the tensity of the domestic situation. Conditions have gone from bad to worse as far as supply is concerned but there is even more concern over pricing policies as several companies have reported annual statements showing far greater volume but lower profits. If this situation extends into a period of declining volume and expense ratios remain the same the paper industry expects plenty of financial difficulty.

Specifically, waste paper collections improved during the week with slightly better weather. "Military" papers continued to take up virtually all available supply and civilian users received further bad news from their sources of supply.

Graphic Arts Annual Meeting

The Graphic Arts Association of Illinois held its annual meeting at the Morrison Hotel on Thursday evening, February 8, with two featured speakers. The first was Representative Frederick A. Virkus, chairman of the Illinois Legislative Commission on Small Business who discussed "Problems Facing Small Business in 1945" and the second was the President of the Graphic Arts association who talked about "Problems confronting the Printing Industry in 1945."

Mr. Dunnagan was re-elected president for the coming year. Eagle Freshwater, Western Newspaper Union, was elected first vice-president; Walter Nelson, Rand McNally & Co., second vice-president; J. F. Snider, Logan Printing Company, third vice-president and W. H. King, Stationery Manufacturing Company, was elected treasurer.

Discuss Sales Tax on Printing Ruling

"The Paper Situation From a Printer's Viewpoint" was presented at the annual meeting of the 100 per cent club of the Chicago Paper Company held at the Bismarck Hotel last week by S. F. Beatty, executive secretary of the Graphuc Arts Association of Illinois. Mr. Beatty's talk indicated a genuine sympathy with and knowledge of the problems of the paper industry and also included an outline of the recent sales tax refund procedure. He referred to the refunds which printers have received from the paper merchants in Illinois who had won a victory in the Illinois courts which removed the necessity of merchants paying the Retailers Occupational Tax on paper sales and passing it on to the printers. The talk was exceptionally well received and helpful in cementing cordial relationships between the well known Chicago paper jobbing firm and its customers among the printer trade.

Paper Salesmen Hold Annual Meeting

The first of the two annual meetings to be held this year by the Salesmen's Association of the Industry was held at the Hotel Sherman, Chicago, on Monday noon, February 5. The second and final session will be held in New York City later in the month. Attendance at the meeting was excellent but the news was nil. While nominations were made and elections held for the various offices of president and divisional vice presidents, both have to be ratified at the New York meetings. Thus the names of those who will lead the association through perhaps its most trying business year will have to wait until action is taken in the East. The report of the president of the Sapeyes was given by President Burt Fisher of the Bergstrom Paper Company, who also presided over the sessions. Reports were also made by western division vice president Pat Patterson of the Flambeau Paper Company and by the vice president of the Eastern division as well. Committees also reported but their pronouncements were likewise held up until final action is taken at the Eastern meeting. Thus the curtain rang down not only on an unusual year business-wise but an unusual one from the standpoint of organization procedure—with two annual meetings as evidence of the sidelight effects of War and War travel restrictions.

Carl Trost of Hollingsworth & Whitney made some interesting observations at the February 5th meeting on the company's new plant at Mobile, Alabama.

Set Salvage Record

The Chicago Catholic parochial schools' record of 12,000,000 pounds of waste paper collected in 1944, the best figure for parochial schools in any metropolitan area in the country was officially commended this week when WPB citations were presented to three ranking schools. The Chicago total beat that of New York city by 2,000,000 pounds. One of the schools, the winner, averaged 162 pounds of paper per pupil per school month in 1944. The runner-up school figure was 141 pounds. Participating in the award ceremony which was very impressive, were Bishop Sheil, John Robinson, representing the Chicago Newspaper Association and James T. O'Connor, executive secretary of the salvage division of the War Production Board. To show that the 1944 record was no "flash in the pan," it was reported that the Chicago Catholic schools have collected 600,000 pounds of paper in a single week's drive. Funds from the sales to dealers are assigned to charitable work of the Catholic salvage bureau and thousands of dollars thus raised are assigned to the Lewis Aeronautical school in a nearby suburb for the purpose of air education for deserving boys.

B. E. Claridge Elected Secretary

[FROM OUR REGULAR CORRESPONDENT]

ERIE, Pa., February 12, 1945—The Hammermill Paper Company announces the election of Bertram E. Claridge as secretary of the company to succeed William F. Bromley recently retired.

Obituary

William Hubeli Waldron

NEW BRUNSWICK, N. J., February 13, 1945—William Hubeli Waldron, vice-president and director of the John Waldron Corporation of New Brunswick, N. J., died at his home here on February 1 in his 80th year.

Mr. Waldron was the grandson of William Waldron who founded the business in the year 1827 and the son of John Waldron for whom the present corporation was named. He became associated with the John Waldron Company in the year 1885 and was active in its management until 1924 when the present John Waldron Corporation was formed. During the past sixty years, however, he had seen the business grow to its present leading position as builders of processing machines for converting operations in all major industries throughout the world.

William Hubeli Waldron was born in New Brunswick, New Jersey, on June 22, 1865, and entered upon his career as a machinery builder upon his graduation from Rutgers University of which he became a life trustee and later a vice-president. He was a director of the National Bank of New Jersey and of the Interwoven Stocking Company and numerous other corporations as well as manager of the New Brunswick Savings Institution.

As a member of the American Society of Mechanical Engineers, Franklin Institute, University Outing Club, Union Club of New Brunswick and the Holland Society, Mr. Waldron was widely known in New Brunswick and throughout industrial and engineering circles everywhere.

He is survived by his wife, Anna B. Waldron and a sister, Miss Florence E. Waldron.

Frank L. Lange

Frank L. Lange, 73, whose service record of 38 years was the longest of any employee at the San Francisco headquarters division of Blake, Moffitt & Towne, Pacific Coast firm of paper wholesalers, died in San Francisco on January 27 after a brief illness.

Widely known throughout Pacific Coast paper circles, Mr. Lange served the company faithfully and well since August 15, 1906, when he was first hired as manager of the warehouse which had been temporarily moved to Oakland because of San Francisco's historic fire. In 1915 he was transferred to the sales staff of the Printing Paper Department and was appointed Sales Manager of that department in 1918. He remained in this position for nineteen years, until 1937, when he was charged with the responsibility of instructing and training new sales personnel.

Actively associated with the founding of San Francisco's Paper Trade Association, Mr. Lange was also an early member of the San Francisco Advertising Club.

Robert R. Clark

Robert R. Clark, prominent in the Middle West as a manufacturer of paper, flour and cereals until he retired in 1938, died at his home recently in Claremont, Cal., following several months of failing health.

As a young man, he was in Mexico with a gold mining company. Returning to the United States, he settled in Lawrence, Kans., about 1884, and engaged in the flour milling and paper manufacturing business there until 1893 when he moved to Chicago. There he became president of the Columbia Straw Board Company.

In 1894 he moved to South Bend, Ind., and was in charge of the Mishawaka Paper and Pulp Company. He was also interested in the Marseilles Wrapping Paper Company of Marseilles, Ill. In 1897 he moved back to Lawrence, Kans., and became manager of the Bowersock Milling Company and Lawrence Paper Mills. In 1903 a flood took out the Bowersock mills.

In the winter of 1903 he went to St. Joseph, Mo., and became connected with the Davis Milling Company as general manager. He changed the name of the company to Aunt Jemima Mills Company in 1914 and was president of that company until 1925 when it was sold to the Quaker Oats Company. He was general manager of the St. Joseph plant of the Quaker Oats Company until his retirement in January, 1938. He and his family moved to Claremont February 23, 1938.

Palmetto Square Flax Packing

Greene, Tweed & Co. announces the development of Palmetto Square Flax Packing which is made by a method not heretofore used in manufacturing flax packing, resulting in a superior kind of flax packing.

Until the advent of Palmetto Flax Packing it has been the custom to plait dry flax rovings to packing size and then immerse the plaited packing in a bath of hot tallow and depend upon the packing to absorb the lubricant.

In the manufacture of Palmetto Square Flax Packing each strand is separately lubricated by the same process used to lubricate Palmetto Asbestos Packing. Each single strand of flax roving is put through a machine which forces high grade tallow under heat and pressure into the core of each strand of flax. After the flax strands are individually lubricated they are plaited to make finished packing. The result of this process is completely internally lubricated Palmetto Flax Packing, containing a balanced uniform amount of lubricant. Since each strand is separately lubricated, it will remain soft and pliable for long periods of time and the finished packing will resist hardening. To the user that means that Palmetto Flax Packing has the lowest possible rate of friction and will give a long service with a minimum of wear on the equipment in which it is used.

All of the materials used in Palmetto Flax Packing are of highest quality. The flax is long line and the tallow is of highest grade.

Palmetto Square Flax Packing is available in regular form or in the graphited style sometimes called Waterproof Hydraulic Flax and prompt shipments can be made. Further information can be obtained by addressing the manufacturer, Greene, Tweed & Co., Bronx Blvd. at 238th street, New York 66, N. Y.

Bray Returns To De Laval

Charles C. Bray has been appointed assistant to the manager of the Worm Gear Division of the De Laval Steam Turbine Company. Prior to accepting this position, he served as a metallurgist for the special steel department of the Philadelphia Office of Joseph T. Ryerson & Sons. Mr. Bray is not a newcomer to the De Laval organization, having served for ten years as a worm gear sales engineer in the De Laval Chicago Office before leaving to join the Ryerson organization.

INSTITUTE OF PAPER CHEMISTRY 15 YEARS OLD

(Continued from page 7)

approves, the contract will remain in effect until October this year, Mr. Lambton said.

Pulpwood Consumers Meet

About 30 leaders of pulpwood-consuming industries met February 6 with Curtis M. Hutchins, Washington, D. C., chief of the pulpwood production branch of the War Production Board, at a luncheon at the Wausau Club, Wausau, Wis. Mr. Hutchins will report on the condition of the north and central Wisconsin pulp wood industry to government officials.

He was told that shortage of tires and trucks has had an adverse effect on some of the smaller pulpwood producers, and the present scarcity of lumberjacks, called into military service or to jobs with more attractive pay, also was emphasized.

Districts Specially Affected

While the situation is national, it particularly affects the pulpwood industry in the Lakes states, the Maine area and the north Pacific coast area, Mr. Hutchins said, for it is to these regions that the pulp industry looks for its spruce and balsam.

He reported that the sulphate industry is not similarly affected, due to the abundance of jack pine and poplar, as compared to spruce and balsam. These latter woods are found in more remote locations and cutting is more difficult, he said.

Spruce and Balsam Critically Needed

Since spruce and balsam make the strongest and longest fibers, they are critically needed for the type of paper that the government requires for its war needs. Mr. Hutchins also pointed to the freight car situation, adding to the difficulties of obtaining pulpwood from western states. He was unable to say whether the government can do much to improve the situation, but promised that it would be given serious thought.

H. C. Collins, president of the Wausau Paper Mills Company, Brokaw, Wis., presided at the meeting.

Benefit Association Pays $52,166

Six death benefits were paid during 1944 by the Employe's Benefit Association of Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. During the previous year there were 14.

H. Lee Minton of the Traveler's Insurance office in Milwaukee addressed the annual EBA luncheon recently. He said that the average is eight or nine deaths per 1,000 policy-holders. EBA now has over 2,000 members.

Total benefits paid out during 1944 amounted to $52,166. They went to members in the following branches: Wisconsin Rapids, Biron, Stevens Point, Appleton, Ahdawagam, Plastics, General Office, Sales and Promotional, Timberlands, Newago Lumber Company, Ltd.

Makes Good Safety Record

The Laboratory and its testing stations of the technical department of the Kimberly, Wis., mill of Kimberly-Clark Corporation completed 27 years of operation without a lost-time accident Wednesday morning, February 7. The last accident occurred February 7, 1919, when one of the chemists received acid burns on his face while boiling acid in a test tube. The department has about 25 employes.

Less Pulp for Kraft Bags

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 14, 1945—Wood pulp authorized for the manufacture of kraft grocery and variety bag paper has been curtailed 10% below the original first quarter authorizations of 79,432 tons, it was announced today by the Pulp Allocation Office of the War Production Board.

The revised level will still meet the minimum requirements established for this grade of paper in the first quarter program determination covering pulp and paper, WPB officials added.

The reduction was made necessary by the loss of sulphate pulp production in the South during January, owing to bad weather and labor shortages, and by a decline in Canadian imports below earlier expectations. Consequently, the WPB Forest Products Bureau found it impossible to maintain the previously authorized level for grocery and variety bag paper and at the same time meet other essential requirements.

The integrated mills manufacturing this grade of paper have been directed to supply for market purposes an amount of unbleached sulphate pulp equal to the 10 per cent reduction.

The Pulp Allocation Office expressed regret over the necessity of altering pulp authorizations between allocations, but said there was no alternative means of meeting the shortage situation that had arisen. Strenuous efforts are being made, the office said, to increase the supply of pulpwood for sulphate production through the use of additional prisoners of war, intensified manpower recruitment and through the inclusion of pulpwood cutting on the critical occupation list of the War Manpower Commission.

Wood Prospects Good in Canada

Prospects are reasonably bright for the Canadian pulp and paper industry reaching its objective of a seven-million-cord wood cut this year, which, if it eventuates, will be an increase of over a million cords above last season's cut.

Cooperation between the government and the industry resulted in wood cutting operations getting under way in good time last autumn. By agreement, there was no wood cut during the summer months, so that available workers could help with the harvest. As soon as the harvest was taken care of the workers were diverted again to the woods. By the end of the year, the cut was well ahead of the previous year. There is usually a little difficulty in getting men back into the woods after the Christmas holidays, but this year everyone seemed to realize the importance of getting back on the job, with the result that the labor problem is not now as serious as formerly. The weather is the greatest problem at present. However, if conditions get no worse, prospects are that the wood-cutting objective will be reached and the heavy snow augurs well for plenty of flood waters to get the wood down the streams in the spring.

William R. Hill Joins Warren Co.

The Warren Steam Pump Company, Inc., Warren, Mass., announce the appointment of William R. Hill as general sales manager of industrial and commercial sales of its centrifugal, reciprocating and paper mill pumps.

Mr. Hill was born in New Jersey and studied

William R. Hill

mechanical engineering at Stevens Institute of Technology and Massachusetts Institute of Technology.

Several years were spent with architects and contractors in building construction and later with Carrier-Lyle Corporation, residential air conditioning, as assistant manager of its New York office

Mr. Hill's last connection previous to joining Warren covered nine years with the Carrier Corporation, Syracuse, N. Y.

The Federal and Marine Department of the company remains in charge of H. Ward Hathaway, who completed 40 years of service on October 3, 1944, and who has directed this division for many years.

Paper in Palestine

H. Y. Natan, managing director of the Mira Trading Company Ltd., who has resided in Palestine since 1925, and who arrived here by Clipper last week on a business mission to the United States during an interview gave some interesting data regarding the past and future paper trade in Palestine.

Mr. Natan's firm has since early 1930 been among the foremost importers of paper into Palestine and has been, as such especially successful as contractor of the Government.

The main purpose of his present visit, as far as the paper trade is concerned, is to find adequate supplies for Palestine's paper requirements for 1945 in general, as well as to discuss the special requirements of the Government Citrus Control Board in particular, requirements which his firm in 1944 and in many previous years has covered to a large extent themselves.

Palestine's main supplies in the pre-war period came from Central Europe, Swedish and Finnish sources where Mr. Natan represented some of the largest newsprint, bond and tissue mills. In 1938, and progressively in the following two years, these countries as source of supplies for the Palestine market were being replaced by the United States and Mr. Natan states that the pioneer work of introducing the American qualities, specifications, weights, particulars of packing, etc. was undertaken by his firm in close cooperation with Walker, Goulard, Plehn Company, Inc., who since that time have enjoyed the biggest share of the entire Palestine paper import.

Due to the Middle East Supply Center's regulations Palestine's total averaged paper import, which before the war including newsprint averaged about 14,000 tons a year has been curtailed to only about 2,500 tons so that the shelves and warehouses of the large wholesalers are pretty empty at this time. Due to the enormous technological development of the young Palestine industry with new factories having been set up under the auspices of the M.E.S.C., the consumption of paper after the war is expected to rise high above pre-war level.

For the last determinable year—1944—the paper consumption in Palestine per capita was about 50 to 60 lbs. for the Jewish Part.

Papers are also being manufactured locally in Palestine; in fact three factories have sprung up manufacturing common bogus paper and grey board but the total production per month only amounts to about 100 tons. Mr. Natan feels that especially the higher grades among the American manufactured papers will have a steady market even after the war, like No. 1 watermarked, bonds, air-mail papers, vegetable parchment as well as white patent coated Manila back and news back boards in the low calipers for the highly developed boxmaking factories. Further, the American citrus paper qualities have already won a reputation of their own and will surely continue to figure prominently in covering the post-war requirements of the Citrus Industries.

Mr. Natan also mentioned that the prices for American papers on a F. O. B. American port basis were not much high than Scandinavian papers. However, the import into the Middle East of American papers remained as small as it was before the war mainly due to the prohibitive freight rates and infrequent sailings of American boats. With the U. S. merchants marine, however, vastly expanded, these two handicaps should be overcome after the war, and this is all the more welcomed as on one hand the increasing number of consumers in the Middle East have grown to like goods with the label "Made in U.S.A." and as far as Palestine is concerned, he is not pessimistic about the potential supply of dollars available for these shipments as Palestine diamonds, which are enjoying a growing popularity in this country, alone prove to be an increasing and reliable producer of U. S. dollers, quite apart from the large contributions in dollars which flow into Palestine, earmarked to help build up the Jewish National Home in Palestine.

Ball Bros. Sell Eaton Mill

[FROM OUR REGULAR CORRESPONDENT]

Muncie, Ind., February 13, 1945—Ball Brothers Company here has announced the sale of their straw board plant at Eaton, Ind., north of here to the Sangamon Paper Mills, 3915 South La Salle street, Chicago. The mill has not operated three years because of lack of straw. The new owners will produce chip board, the announcement said, and expect to have the plant in production within 60 days.

Paper Man Trains Chinese Soldiers

Staff Sergeant LeRoy L. New, 26, of Dexter, N. Y., formerly Assistant Chemist with the Dexter Sulphite Pulp and Paper Company, has for the past year, been on duty as assistant to the Chemical Officer of Y-Force Operations Staff, the world's largest military mission.

Y-Force, under the leadership of Brigadier General Frank Dorn, of San Francisco, Cal., has been putting into effect its mission of improving the combat efficiency of the Chinese Expeditionary Force by training them in modern battle tactics and in the use of weapons furnished them by the United States.

When this training was finished, infantry, signal,

U. S. Army Signal Corps

SGT. NEW INSPECTING JAPANESE GAS MASK

medical, engineer, chemical warfare, veterinary, ordnance and artillery personnel of Y-Force worked in liaison with the CEF in its Salween River Campaign, the first offensive launched by the Chinese in the seven long years they have been fighting the Japanese, to drive the Japs from the Western Yunnan Province.

This drive has now cleared the Burma Road west of the Salween from Jap domination, making a link with the Ledo Road being forced through the jungles of North Burma possible, thus giving China a much-needed land supply line.

Sergeant New has been responsible for much of the chemical warfare training given to the Chinese. The Chinese soldiers successfully used the flame-thrower, on which weapon chemical warfare personnel spent much time in instruction, to reduce well-fortified and deeply-dug-in Jap positions on the steep sides of the Kaoli Kung Mountain Range west of the Salween.

For his service with Y-Force, Sergeant New is entitled to wear a bronze star on his Asiatic Pacific campaign ribbon.

Wholesalers' Paper Sales Gain

Wholesalers' sales of paper and paper products for 1944, totaled $92,804,000, a gain of 2 percent over 1943, according to announcement by the Census Bureau, based on figures from a group of reporting firms.

Sales in this December amounted to $4,934,000, a decline of 8 percent from November, and 11 percent less than for December 1943.

Inventories, based on figures from reporting firms, were 6 percent less in December than in November, and 9 percent under those of the previous December.

Rayonier Adding to Timber Holdings

Edward Bartsch, president of Rayonier Incorporated, the country's largest manufacturer of dissolving pulps, announces that arrangements have been made to purchase the timber holdings and logging equipment of the Bloedel Donovan Lumber Mills located on the Olympic Peninsula in the state of Washington. Bloedel Donovan is one of the prominent logging concerns in the Pacific Northwest.

The manufacture of dissolving pulps, an essential raw material for making rayon, cellophane, photographic papers, plastics, explosives and other cellulose-base products, depends upon a continuous supply of pulpwood. The new purchase will assure a sufficient supply of logs to permit the early reopening of the company's Shelton, Washington, mill which was closed in August, 1943, due to a shortage of logs. The company's other plants at Grays Harbor and Port Angeles, Washington, and Fernandina, Florida, have been operating at capacity.

Reopening of the Shelton mill will place the company in position to meet the requirements of its customers and obviate the necessity for them to import dissolving pulps from abroad. Mill capacity of dissolving pulp manufacturers in the United States and Canada will then be sufficient to meet the increased domestic demands.

N. E. Paper Men Hold Meetings

BOSTON, Mass., February 12, 1945 — Subjects of current interest to paper merchants were discussed by members representing The New England Paper Merchants Association, Inc., the National Paper Trade Association, Office of Price Administration, and War Production Board at a meeting at the Narragansett Hotel, Providence, R. I., January 30, and at the Hotel Garde, Hartford, Conn., Feb. 1. To hear the present status of war regulations, 50 merchants were present at the Providence meeting and more than 70 from Connecticut and Western Massachusetts at Hartford. At a similar meeting at the Parker House, Boston, in December, previously reported, 100 attended.

At all three meetings Samuel Ginsburg of Ginsburg Bros., Somerville, Mass., president of the New England Paper Merchants Association, presided, and William H. Walpole of Rutter & McNaught, Boston, vice-president of the Fine Paper Division and James J. Dwyer of Stone & Forsyth Co., vice-president of the Wrapping Paper Division, were present.

W. G. Leathers, Assistant Secretary of the National Paper Trade Association, discussed many subjects of interest to merchants.

To Represent Noble & Wood

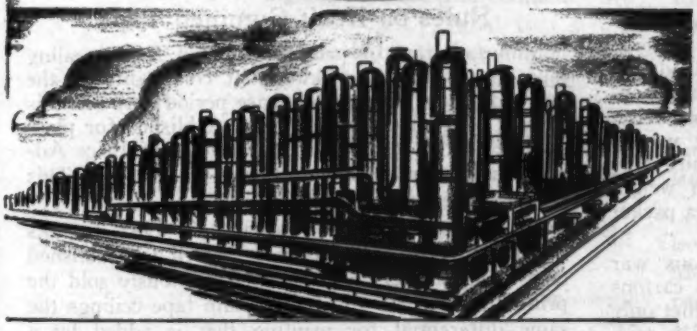
H. N. Weir, treasurer and general manager of the Noble & Wood Machine Company, paper mill machinery manufacturers, Hoosick Falls, N. Y., announces the appointment of C. B. ('Baldy') Smith, 2344 Crane Avenue, Kalamazoo, Mich., as sales engineer.

Mr. Smith will represent Noble & Wood in the states of Michigan, Wisconsin and Minnesota.

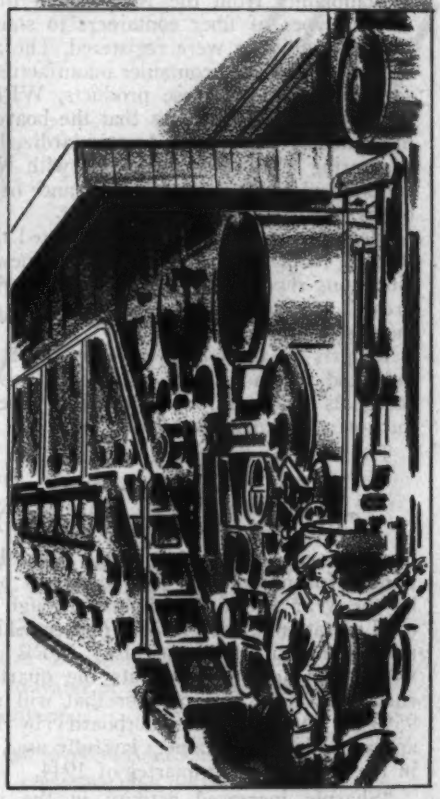
Jacob Parent, who formerly covered this territory, has moved to 136 South 17th street, Richmond, Ind., where he will make his headquarters, representing Noble & Wood in the states of Ohio, Illinois and Indiana.

Do you know that . . .

SINCLAIR PRODUCING OIL WELLS IF PLACED END UNDER END WOULD REACH TO THE CENTER OF THE EARTH—MORE THAN 3,500 MILES. SINCLAIR RANKS AMONG THE LARGEST PRODUCERS OF CRUDE OIL.



SINCLAIR'S 10 GREAT REFINERIES, IF MASSED TOGETHER, WOULD COVER AN AREA OF 2,300 ACRES —THE APPROXIMATE AREA OF A CITY OF 100,000 POPULATION. THESE REFINERIES MANUFACTURE A FULL LINE OF QUALITY PETROLEUM PRODUCTS FOR ALL MILITARY, INDUSTRIAL AND GENERAL USES.



FOR THE PAPER INDUSTRY SINCLAIR HAS DEVELOPED A LINE OF HIGH QUALITY, LOW COST LUBRICANTS THAT ASSURE ECONOMICAL MAINTENANCE OF ALL TYPES OF EQUIPMENT.

SINCLAIR IS EQUIPPED TO SERVE YOU BETTER!

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

Favor Full V-Board Production

Proposals of the War Production Board Paperboard Division to increase the production of container board, particularly V-box board, and keep all mills in full operation were endorsed in principle by members of the Containerboard and Fiber Box Industry Advisory Committees at a recent meeting, WPB said last week. In this connection, proposed amendments to Containerboard Order M-290, including means for conserving Kraft pulp, plans to insure a more equal distribution of containerboard so that all authorizations for board could be filled, and changes intended to provide more flexible operation of the order were discussed by members of the committee and WPB officials.

Present V-box allocations for the first quarter were reported as running at the rate of 260,000 tons by Philip F. Paul, of the Paperboard Division, who was Government presiding officer at the meeting.

Complaints from the Navy about the failure of certain types of fiber containers to stand up under service conditions were registered. The assistance of the paperboard and container manufacturers is necessary in improving these products, WPB said. One committee suggestion was that the board to be used in producing these boxes be standardized at the manufacturing level so as to comply with Naval specifications and assure better performance of the finished boxes.

Members of the committee indicated their willingness to cooperate and asked for the new board specifications reported as being more exacting than the present requirements in order to insure stronger and more stable boxes.

Reports on the collection and use of waste paper indicated that additional efforts are needed to meet the goals required for maintaining paperboard production at its maximum expectancy.

The next meeting will be held March 6.

Cuts Use of Fiber Shipping Boxes

A 5% cut in the use of new fiber shipping containers for non-military purposes has been ordered by the War Production Board through amendment of Limitation Order L-317 (Fiber Shipping Containers; Manufacture and Use), WPB reported last week. The amendment limits the quarterly use of such containers to a number that will require only 95% of the total containerboard (by both weight and area) in the containers lawfully used by a packer in the corresponding quarter of 1944.

"Sharply increased activity in the various war theatres creates an even heavier demand on cartons for military supplies, and this need can be met only by greater conservation at home," WPB officials said. The officials pointed out that containerboard requirements for V-boxes have increased almost 50% since the first quarter of 1944.

The amendment to Order L-317 is effective as of January 1, 1945. WPB announced that all grants of appeals under Order L-317 are expressly canceled by the amendment.

Under the amendment, the vast variety of Schedule III products (running from food to curtain rods) lose their separate carton quotas, as previously established in relation to a base period, and come under a blanket provision that limits a packer to a calendar quarter usage of 95% of the containerboard content (in terms of both weight and square feet) legally used by him in the corresponding calendar quarter of 1944, or to 23¾% of the total 1944 use. The amended order now provides that any unused portion of a quarterly quota may not be added to the next quarter's quota, and borrowing from one quarter to another is prohibited.

Shipping containers used for military purposes in 1944 must be excluded from the base upon which the packing quotas are computed; formerly such containers could be included. However, containers to be used for military purposes in 1945 are not chargeable to the packer's quota.

"Reshippers" are to be counted as "new" containers and must be included in the packer's 1944 base usage. They are chargeable to the packer's 1945 quota. Bona fide used cartons, however, remain outside the provisions of Order L-317. A "reshipper" is defined as any new container, made in whole or in part from solid or corrugated fiber, that contains empty inner containers (such as glass jars, cans, etc.) received by the packer, and which is then used by him for shipping inner containers packed by him with some product.

Some products that appear on Schedule III of the order for the first time include: small agricultural equipment, anti-freeze liquids, commercial fishing equipment, office machinery, lubricating oils and grease.

Carton specifications for meats and other packinghouse products listed under Schedule IV are essentially the same as those previously established, but the former option of using 85% of 1943 carton usage is revoked.

WPB officials said that full compliance with the revised L-317 is necessary if more drastic controls are to be avoided. Enforcement will be strict, they said.

WPB emphasized that today, more than ever before, conservation of containers is still an urgent matter and reuse of cartons is essential.

Rules on Kraft Gummed Tape

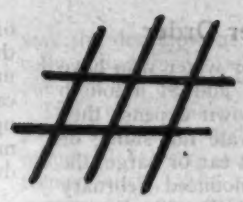
Manufacturers of printed gummed Kraft sealing tape who were not making that commodity in the July 1 to October 15, 1941, base period may sell this item at prices above the ceilings established for plain gummed Kraft sealing tape, the Office of Price Administration announced on February 13, 1945. This is Amendment No. 4 to MPR-459.

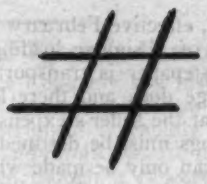
This action, effective February 17, 1945, permits new manufacturers in this field, as well as established tape manufacturers who had not previously sold the printed product, to add to the plain tape ceilings the same differential for printing that is added by a closely competitive seller.

Previously, only those who had a practice of adding a differential for printing in the base period could now do so. Today's modification of this provision removes an inequity to manufacturers entering the printed gummed Kraft sealing tape field for the first time.

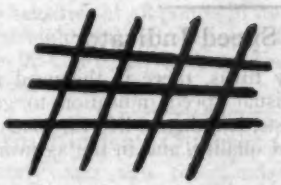
The change has been made after consultation with the Industry Advisory Committee for the Gumming Industry.

Gummed Kraft sealing tape is generally sold for use by industrial and commercial establishments, principally stores, for sealing packages. It is seldom sold at retail.





A message ☆ to paper chemists ...from Mersize



THIS "language" is familiar to all chemists and superintendents of writing paper mills. The characters are unimportant . . . what they tell is whether or not the paper upon which they are made is properly sized to eliminate the possibility of feathering when written on with ink.

Sometimes, particularly on rag content papers, the ink feathers no matter how much rosin and alum are used in the sizing operation.

Feathering is invariably eliminated, however, by using a mixture of one part Mersize resin to three parts of rosin. Also, the amount of rosin furnished to the beaters can be cut by 50% or more on hard-sized papers.

Mersize is supplied as a paste, readily dispersible with mechanical agitation in water or in the dilute rosin size emulsion.

Monsanto offers you technical service and assistance on a mill trial with Mersize, as well as other Monsanto paper chemicals. Simply write, wire or phone: MONSANTO CHEMICAL COMPANY, Merrimac Division, Everett Station, Boston 49, Massachusetts.

MONSANTO CHEMICALS
SERVING INDUSTRY...WHICH SERVES MANKIND

☆ *Familiar to all paper chemists and mill superintendents are these examples of the feathering test taken on writing papers. These marks are made on the paper sample with a common steel pen, dipped in standard writing ink. The less the ink feathers out, of course, the better the paper is for writing purposes.*

Amends Waste Paper Order

Shippers of wastepaper by rail or water who have no rail siding or barge dock may add $1 a ton to their ceiling prices when at their own expense they transport the wastepaper to a private rail siding or barge dock and load it on a freight car or barge, the Office of Price Administration announced February 13. This is amendment No. 10 to MPR—30—Wastepaper.

This action, effective February 17, 1945, represents an extension of a similar loading charge permitted when the wastepaper is transported to a public rail siding or barge dock and there loaded on a freight car or barge at the seller's expense.

Such loadings must be destined to consumers, and the addition can only be made when there is no rail siding or barge dock at the point of shipment or at the point where the paper was packed.

OPA said that the present limitation of the loading charge to wastepaper transported to public rail sidings or barge docks had resulted in the virtual elimination of wastepaper shipments through private sidings or docks other than those located at point of shipment.

Today's extension of the loading charge applicability will result in little, if any, price increase to consuming mills, OPA said. The main effect will be to encourage the flow of wastepaper through private sidings and docks, thus making available all channels of transportation on an equal basis of compensation.

Low Cost Speed Indicator

Wherever machinery turns, there is the need for reliable, continuous, visual speed indication to gain advantages in lower costs, lengthened life for machinery and tools, improved quality, and in the assurance of safe operation.

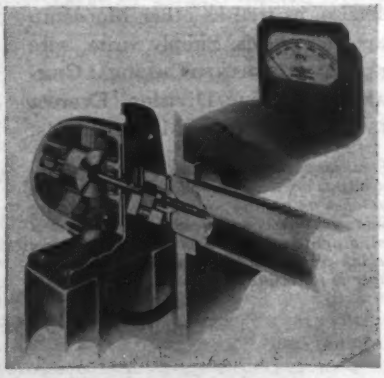
Now a sturdy, accurate, low-cost electric speed indicator, developed by the Reliance Electric and Engineering Company, Cleveland, makes it possible to determine and to set proper operating speeds in a broad new field of applications, where the installation of such instruments was heretofore not economically feasible.

The Reliance Electric speed indicator, which gives accurate readings of speeds from 100 rpm to 5000 rpm, consists of two units. The pick-up unit, a miniature six-pole alternator with a permanent magnet rotor, is mounted on the shaft whose speed is to be measured. The indicator, a permanent magnet, moving-coil type, meters the pick-up output on a 3¾" scale which covers 95° of arc. The resistance of the indicator has been made sufficiently high, so that the size or length of the leads connecting the units will have no effect on accuracy, and the indicator may be located at any distance from the pick-up unit. The indicator is not effected by other magnetic material, and there is no loss of accuracy due to length of service.

Reliance's 30 years' experience with variable-speed machinery drives has shown company engineers the need for such a compact, long-life production indicator, and they have built the utmost in sturdy simplicity into the mechanism.

Instantaneous and continuous speed indication is independent of the direction of rotation of the shaft. Pick-up windings are stationary, and there are no commutators or slip rings. No conduits are required, and lifetime lubrication further simplifies maintenance.

Special attention to flexibility of use has been given, too, in the physical design of the indicator. Fool-proof shaft coupling is provided, and the indicator may be bracket or panel mounted. Indicators are provided for full-scale deflection corresponding to 1500, 2000, 2500, 3000, and 5000 rpm, and special scales are available to read in other units, such as feet per minute, and process cycles of varying times.



SECURES PRODUCTION ADVANTAGES

New AE Perfect Spread Stoker

A new spreader-type stoker based on one of the latest improved methods of low cost steam production, and backed by 38 years of stoker engineering experience, has been announced by American Engineering Company. "Streamlined with a purpose," this modern, completely automatic stoker efficiently burns all kinds and grades of solid fuels, including by-products and plant refuse, whether wet or dry. This versatility permits the utilization of favorable market prices and fuels available in any locality.

Extremely clean and quiet in operation, the AE Perfect Spread Stoker gets up steam on instant demand with its combination of an all-speed, non-clog feed, uniform fuel spread by the reliable overthrow method, and thorough combustion through forced draft and exclusive grate design. The stoker can be easily installed under most existing boilers to produce steam from 175 hp. up to 200,000 lbs. per hr.

Other advantages that cut fuel bills and boost boiler room operating efficiency include: fully protected mechanism, accessible without tools; simple controls; water cooling; long-life grates with power dump, and many more features. The new descriptive bulletin "More Steam at Lower Cost" will be sent on request. Write American Engineering Company, Philadelphia 25, Pa.

Philadelphia Waste Collection Lags

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., February 13, 1945—The shortage of waste paper in Philadelphia area is seriously hampering the war effort, James W. Stewart, regional WPB salvage director, told the Philadelphia Waste Paper Salvage Committee last week at the Poor Richard Club.

Mr. Stewart said: "Scrap is still an essential industry. One of our largest mills was closed down for four days last week and faces an additional curtailment unless waste paper arrives. Several other mills in the Philadelphia area are confronted with the same situation."

Aspects of Industrial Forestry

"Aspects of Industrial Forestry" was the theme of an address recently by H. J. Hodgins, forester for Pacific Mills Ltd., at the annual dinner meeting of the Vancouver Section, Canadian Society of Forest Engineers. H. H. Baxter presided at the meeting which was held at the Brock Memorial Building, University of British Columbia, Vancouver.

Some of the highlights of Mr. Hodgins' address were as follows: The prime aspect of industrial forestry is to develop programs towards a sustained yield objective, recognizing that the attainment of such an objective will be a long process involving the solution of many serious problems of an economic as well as a forestry nature. Its greatest needs at present are adequate forest protection, security of land tenure and equitable taxation since present provisions make long term forestry plans economically unsound.

One of the most important immediate requirements is to develop a co-operative organization composed of private and government foresters which would guide the development of a flexible forest policy aimed at providing for sustained yield management of our forests.

If and when enabling legislation provides for this development the industrial forester must take the following steps:

1. Analyze his company's holdings. Make a survey of what forest it owns or controls and what is tribuary to it in other ownership, either private or Crown.
2. Plan a tentative working circle based on this data.
3. Co-operate with the other owners involved in obtaining an agreement for the organization and development of proper forest protection plans for the unit.
4. Develop management plans for the area, keeping in mind, first, the pathological factors and secondly, the economical factors involved when planning the cutting. As cutting progresses introduce silvicultural practices best suited to the area.

Now, and only now, can the forester begin to plan for sustained yield management and correlate cut with growth. Our knowledge of rate of growth, particularly on mature and overmature timber areas, is limited and must be increased and correlated with the rate of deterioration due to disease and insect damage. However, the allowable cut for the area can be approximated for preliminary cutting plans and adjusted as experience and more accurate data are developed. This can best be done while we are cutting the old growth timber so that when we start cutting the second growth we may be in a position to determine with much greater accuracy the allowable annual cut which the area will provide on a sustained yield basis.

Many serious problems must be solved before we can accomplish positive sustained yield management. At our present stage of development restricting the cut to sustained yield capacity is not possible by simply introducing arbitrary legislation. What is most necessary is long term co-operative action between government and industry in order to develop most equitably a forest policy dedicated to sustained yield management.

To do this we need leadership in progressive forestry practice and such leadership can only be found within the forestry profession. Therefore, it is the duty of every forester to assist in every possible way the development of a wise, progressive, technically sound forest policy for British Columbia. No one else can be expected to do this.

If forestry legislation proceeds along the lines and to the ends suggested, there is no question but that industrial forestry can and will develop and expand tremendously, thus assuring this province of the continuous prosperity of industries based upon its greatest natural resource.

New Type of Flow Indicator

The Fischer & Porter Company has just issued a new catalog describing its Rotasight Flow Rate Indicator. This little instrument is rapidly replacing Bull's Eye Sight Flow Indicators because it indicates the true flow rate, even though it is very compact and comparatively inexpensive.

The Rotasight operates on the rotameter area-type principle and has a V-ported transparent metering tube with a float which rises in direct proportion to the flow through the meter. The catalog is profusely illustrated, and describes construction details and applications of the instrument in a very clear manner. It also gives engineering dimensions, flow capacities and prices.

One of the most interesting applications described is the use of the Rotasight as a flow rate alarm. The manufacturer claims that it is the only alarm that is operated by flow rate changes only and which is equally sensitive at all points in its flow range because of its straight line calibrations. In writing, ask for Bulletin 92-C, Fischer & Porter Company, 949 County Line Road, Hatboro, Pa.

Form Lindsay Quarter Century Club

Several years ago the Lindsay Wire Weaving Company, of Cleveland, Ohio, presented service pins to 24 employees who had been with the organization for 25 years or more. Recently these "old-timers" were formed into a group which took the name of The Lindsay Quarter Century Club. The 29 members represent 928 years' service, an average term of 32 years. Periods range from 25 to 40 years apiece.

The meeting was held at The Cleveland Club. After dinner, President A. Fred Crossman presented a handsome wrist watch to each member. Thanking them for their contribution to Lindsay's record, Mr. Crossman said, "You have helped to build reliability, quality and reputation". Harry H. Field, treasurer of Lindsay, was elected president of The Quarter Century Club.

Glatfelter Mill Votes Against Union

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., February 12, 1945—At a meeting held last Tuesday, a proposal to have the International Brotherhood of Pulp, Sulphite and Paper Mill Workers A. F. of L. as their bargaining agent, was voted down by the employes of the P. H. Glatfelter company, paper manufacturer at Spring Grove.

Two hundred and eight of the 413 employes eligible to vote cast their ballots against the union. Votes cast for the union numbered 172. The election was held under the National Labor Relations act and under the supervision of the regional director of the board.

It was the second time the Glatfelter employes voted against joining a union. They turned down a proposal to join with the C. I. O. some months ago.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending February 10, 1945

STOCKS

	High	Low	Last
A. P. W.	5½	5⅛	5½
Armstrong Cork Co.	46	45¾	46
Celotex Corp.	16¼	16	16
Celotex Corp., pf.	20	19½	19⅞
Certain-Teed Products Corp.	8⅞	8¼	8½
Certain-Teed Products Corp., pf.	149	145	147
Champion Paper & Fibre Co.	33¼	31¼	33
Champion Paper & Fibre Co., pf.	114	113	113
Congoleum Nairn Co.	28⅞	27⅜	28⅜
Container Corp. of America	29⅛	27¾	28⅜
Continental-Diamond Fibre Co.	12¾	12	12½
Crown-Zellerbach Co.	22	21¼	21¾
Crown-Zellerbach Co., pf.	104⅞	103½	103½
Dixie Cup Co.	20½	20	20
Dixie Cup Co.,—A	48⅞	48	48¼
Flintkote Co.	27⅞	26	27⅞
Flintkote Co., pf.	109	109	109
Robert Gair	6¼	6	6¼
Robert Gair, pf.	17⅜	17¼	17⅛
International Paper Co.	21¼	20¾	21
International Paper Co., pf.	90¾	89¾	89⅞
Johns-Manville Corp.	110	109	109½
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	43	41¾	42¼
Mac Andrews & Forbes	32	32	32
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	44½	42¾	43
Mead Corp.	14	13½	13⅞
Mead Corp., pf. A—6%	101¾	101	101½
Mead Corp., pf. B—5½%	98½	96¾	98½
National Container Corp.	14¾	14	14⅛
Paraffine Companies, Inc.	59	58½	58½
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	18¾	17¾	18¾
Rayonier, Inc., pf.	35½	35⅛	35⅜
Ruberoid Co.	39	36	37½
Scott Paper Co.	43½	43¼	43¾
Scott Paper Co., pf.	112½	112	112
Sutherland Paper Co.	34¾	33¾	33⅝
Union Bag & Paper Corp.	15½	14¾	15
United Paperboard Co.	7¾	7	7
U. S. Gypsum Co.	83	82	82
U. S. Gypsum Co., pf.	...	...	...
West Virginia Pulp & Paper Co.	25¾	25	25
West Virginia Pulp & Paper Co., pf.	109	109	109

BONDS

Abitibi Pulp & Paper Co. 5s '53	101¼	101	101¼
Celotex Corp. 3¾s '55	104⅜	104⅛	104⅜
Certain-Teed Products Corp. 5½s '48	103¾	102¾	103
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	109½	108¾	109½
International Paper Co. 5s '47	104⅜	104⅛	104⅜
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending February 10, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	38	37⅜	38
Hummel-Ross Fibre Corp.	7⅜	7¼	7⅜
St. Regis Paper Co.	7	6¾	7
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	6¼	6	6¼

BONDS

American Writing Paper Co. 6s '61	101	101	101

Container Corp. Makes Good Report

Container Corporation of America reports as follows for 1944: (preliminary) net profit, after $7,850,000 provision for taxes and renegotiation reserve and $600,000 for war and post-war reserve, was $2,063,200, equal to $2.64 a share. This compares with $2,184,054 or $2.80 a share for 1943, when $7,700,000 was deducted for taxes and renegotiation reserve and $500,000 for war and post-war reserves.

Dividends of $1,171,879 were paid during the year represesenting $1.50 per share on the outstanding capital stock. There was an increase in working capital of approximately $400,000. Capital expenditures amounted to $1,100,000.

Consolidated net sales for the year amounted to $69,600,000, an increase of 13.86% over the previous year and a new peak in the company's history. The gross profit on sales before Federal income taxes was 15.10% for 1944 as against 16.98% for 1943. The company has been experiencing an increasing "squeeze" between slowly but inexorably rising costs and fixed price ceilings. The present volume of orders is considerably in excess of the company's ability to produce because of raw material and labor shortages.

C. W. Smith Goes with Central

C. W. Smith, president of the Central Paper Company, Inc., Muskegon, Mich., has announced the addition of E. W. Pitt to the executive staff of the company. Mr. Pitt, better known to industry as "Ed," will have the title and duties of director of sales. This appointment is in line with the company expansion program and will be another step toward bettering customer relationship and servicing the many accounts for Industrial and Custom Built Specialty Papers. Mr. Pitt expects to spend some time familiarizing himself with details at his headquarters in the general offices at Muskegon; afterwards, he will visit the district offices of the company and meet with his many acquaintances in the various territories.

Mr. Pitt comes to Central with a thorough understanding of paper merchandising which will be of great assistance in his duties of developing and marketing Central's many paper products. Mr. Pitt was last connected with the Sherman Paper Products Company as General Sales Manager, being with that company for 14 years.

Union Bag Nets $1,584,013

Net income of the Union Bag and Paper Corporation for 1944 was $1,584,013, equal to $1.25 a share, according to the preliminary operating statement of Alexander Calder, president to stockholders. In 1943 the corporation had a net income of $1,058,476, or 83 cents a share.

Last year the company provided $5,027,454 for income and excess profits taxes and renegotiation, while only $1,781,374 was required the year before. The Price Adjustment Board has ruled that no excessive profits were realized in 1943, the report states.

Net sales increased 16.3 per cent in 1944 to $39,021,078 from the 1943 volume of $33,554,955.

Working capital on December 31, 1944, amounted to $6,943,222, compared with $5,741,591 a year earlier. The company last year reduced its outstanding 3⅝ per cent debentures by $1,125,000 to $6,375,000.

Consolidated Paper Earns $1,072,101

The Consolidated Paper Company reports as follows for 1944: Net income, $1,072,101, equal to $1.43 a common share. After giving effect to provision for renegotiation amounting to $26,000, net income for 1943 would have been $1,196,048, or $1.59 a share.

Black-Clawson Nets $3.33

The Black-Clawson Company for the year to September 30, reports a net income of $291,608, or $2.34 a common share, compared with $400,604, or $3.33 a share in previous year; net sales, $6,286,496 against $6,564,481.

United Paperboard Nets 17 Cents

The United Paperboard Company and subsidiaries for the six months to November 30, reports a net profit of $67,359 or 17 cents a common share, against $49,894 or 10 cents a share in 1943.

Buy Vermont Paper Co.

BOSTON, Mass., February 5, 1945—Roy H. Allen and Henry DeSoto, both of Holliston, Mass., have purchased the Vermont Paper Company at Burlington, Vt. The co-partnership is operating as the Champlain Paper Box Company, manufacturing set-up paper boxes, including cartons for candy. For the last year, activities at the plant have been confined to making cartons for candy, under Guy T. Vitalgliano of the Vermont Confectionery Company, who signed papers as treasurer of the Vermont Paper Box Company. The new company has expanded operations in the manufacture of set-up paper boxes. Messrs. Allen and DeSoto have committed themselves to the purchase of the building in which the plant is located, a four-story brick structure, with a three-story frame annex.

Mr. Allen said "we expect to add new equipment as it becomes available. In fact, we have some on the way. We will expand operations over the present set-up as much as demand and wartime restrictions permit. Priorities will help us."

The sale includes the manufacturing equipment and other accessories on the third and fourth floors of the building, owned by the Allen Realty Company.

Mr. Allen, who attended Norwich University for two years as a member of the Class of 1924 and then transferred to Massachusetts Institute of Technology, was with the Dennison Manufacturing Company for 16 years.

Mr. DeSoto traveled extensively in Vermont as a representative of the Nelson Baker Manufacturing Company, druggists.

New York Mills Run at Capacity

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., February 13, 1945—Many of the principal paper manufacturing plants in this district are running with night shifts and the unprecedented demand for products has exceeded all expectations. In some instances mills are booked ahead for many months on government orders and only a sudden termination of the war would relieve the situation. Experienced help is at a premium and the drafting of many workers has left wide gaps to be filled. In this city the Mohawk Paper Mills are running with day and night shifts and with full complement of employes. At Corinth, the International Paper Company is seeking help on an extensive scale and offering the best of inducements such as group insurance with paid vacations to prospective workers. The United Paperboard Company, Thompson, is also seeking help in neighboring places with overtime work offered. The Hudson Falls mills of the Union Bag and Paper Company also are operating at capacity although a shortage of skilled help is hampering some departments. The mills of Finch, Pruyn & Company, Glens Falls, have also felt the labor shortage to some extent but full time schedules are in effect. The Albany Felt Company is seeking help in other localities for both its day and night shifts and all available space is being used for production purposes. The mills of F. C. Huyck & Sons, Rensselaer, has sent out a call for inexperienced help and is offering postwar opportunity. Day and night schedules are in effect with government contracts getting the preference. At Castleton the mills of the Fort Orange Paper Company are running full blast although a shortage of help has affected some departments.

REFILLING IS AN IMPORTANT PART OF OUR SUPER-CALENDER ROLL BUSINESS

The refilling and refinishing of super-calender rolls has always been an important part of our roll business. With wartime restrictions it is more important now than ever before. We can supply you with Appleton Fillings that fit the finishing requirements of your papers. Our selection covers the full range from cotton through to the hardest paper rolls and includes our New Process Fillings especially developed for coated or clay filled stocks run at high speeds. In this wide selection is the exact type to give the finest finishing results on any super-calender or embossing application. In spite of many limitations we maintain our high standards of quality. We refill rolls of any manufacture.

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Indiana Mills Lack Coal

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., February 12, 1945—Among the paper manufacturers of Indiana, the coal situation last week assumed major importance. The state, with the exception of Terre Haute, had been put on an embargo list by government directive and where a couple of weeks before nothing was dreamed of a coal shortage, one suddenly loomed when the embargo was declared. The manufacturers generally had some reserves, but not suspecting government action and there having been no indication of an interruption of the coal supply, did not carry more than average coal reserves. As it turned out, the stock piles were not nearly sufficient. What coal that was permitted to reach the state, was claimed for the most part by retail dealers, whose customers were freezing—they said. Those plants operating largely or to some extent by electric current were not so badly scared. And to add to other troubles, it appears now that the manufacturers are likely to be cut still further in their manpower, which has been none too plentiful for the last two years. Paper stock warehouses, already short of help in the collection of waste paper, also are expecting to feel a further pinch in manpower.

In the meantime, a heavy demand for all items in the paper list continued. This was particularly true in the paper box, bag and wrapping paper field. The box demand continued very heavy, with much of the production going to defense plants and the armed services. Every effort is being made here to prevent useless use of paper bags and wrapping paper and the public is responding somewhat more readily than a year ago when the situation also was very acute. Newsprint demand was good with publishers buying their quotas. Tissues were scarce, particularly cleaning tissues.

Demand for waste paper was urgent. Prices for all grades of paper stock were strong at ceiling levels. Rag demand also continued active with cotton cuttings strong. Roofing grades also were popular.

Post-War Employment

Full employment or unemployment after the war? is the question posed by a booklet entitled "Production Management—and How It Affects Productivity, Costs and Employment" just issued by Albert Ramond and Associates, industrial engineers.

Solution of the problems created by the tremendous wartime expansion of our productive capacity and working force, the booklet states, requires establishment of "a relationship between incomes and prices that will assure the necessary purchasing power and confidence. This calls for low prices and high incomes, both of which are closely dependent on high productivity. It demands the most effective use of all our resources—men, plants and materials."

Procedures and policies helpful in the attainment of these aims, based on experience in over a thousand plants, are outlined in the 40-page booklet, which includes 12 pages of pictorial diagrams and charts. Sections are devoted to work measurement, method improvement, labor cost and expense control, production control, job evaluation, incentive wage plans for production workers, indirect workers and supervisors, and labor's attitude toward increased productive efficiency.

Throughout the presentation, emphasis is put on the need for enlisting workers' cooperation in improvement programs. "In fact," the booklet points out, "success may depend largely on labor's attitude. Labor will benefit greatly from such programs and therefore has every reason to give its full cooperation."

Workers' fear of losing jobs because of increased productivity is the basic reason for their resistance to improved methods and equipment, according to the brochure. To overcome this fear, it states, "a policy whereby management gives workers protection against the immediate unfavorable consequences of technological improvements is definitely desirable." Aside from the human consideration, it is pointed out, such a policy gives management substantial advantages in the way of increased production and lower costs.

Turkey Opens New Mill

A second paper factory has been put into operation at Ismut, Turkey, and although it is said to have an annual capacity in excess of 10,000 short tons of paper and paperboard, shortages of wood pulp will probably prevent full-scale production for some time, according to a report to the Department of Commerce. The fact is, the plant was opened at this time primarily for pilot runs and Turkey will still import considerable quantities of cigarette paper for the Government-owned cigarette industry as well as kraft and other special kinds of paper.

Div. for Polymer Chemistry

Organization of a separate division of polymer chemistry under the direction of Dr. Herman F. Mark, the noted international authority, who has been professor of organic chemistry for the past five years, has been announced at the Polytechnic Institute of Brooklyn following action by the Corporation providing for the establishment of a Highpolymer Research Bureau.

With this move, Polytechnic becomes the first educational institution in the United States to set up a complete division for polymer chemistry.

To meet the growing need in the field of plastics chemistry, the new Highpolymer Research Bureau at the Polytechnic Institute, according to President Harry S. Rogers, was formed to set up a vigorous organization under strong leadership with the purpose of bringing the fundamental knowledge of the chemistry of plastics up to the present empirical knowledge of plastics technology.

With the creation of Polytechnic's Highpolymer Research Bureau there will now be in existance in this country a center for polymer work which undoubtedly will attract both national and international attention as the result of the data it will make available, Dr. Rogers stated. In functioning as a research bureau it has the advantage of being in an area where a large part of the polymer work in industry is being done. For the chemist who plans to enter the plastics industry, or who already is in it, the bureau will be a center for information as well as a center for advanced study and research.

Dr. Mark's group, which is carrying on a dual program of research and teaching, includes the following leading scientists: Dr. I. Fankuchen, adjunct professor of crystal chemistry at Polytechnic, and consultant to several corporations on X-ray diffraction problems; Dr. William P. Hohenstein, research associate at the Polytechnic Institute; Dr. Doty, and Dr. Stern, as full time staff members; and Dr. Arthur Tobolsky, of Princeton University, who is a part time instructor in physical chemistry at Polytechnic; Dr. Turner Alfrey, who took his Doctorate under Dr. Mark and who is new research associate on the Quartermaster Corps project on coated fabrics at the Polytechnic Institute, and research chemist for the Monsanto Chemical Company, plastics division, Springfield, Mass.; and Dr. Elliott Montrell, who has been affiliated previously with the Princeton and Yale universities, as visiting lecturers.

HISTORICAL HIGHLIGHTS OF PAPERMAKING NO. 10

They couldn't steal his genius

It was in 1828 that David and John Ames took over their father's paper business — both youngsters — both green in the ways of the paper trade. Before long, word got 'round that the Ames Boys were "going places" for John was a natural inventor.

Workmen came pouring in . . . but some not to work. They stole his ideas. But they couldn't steal his genius. He kept right on inventing.

His first invention shortened paper production time from days to hours. It was the cylinder machine — a vague idea that he bought and perfected to working condition. This was followed by many others although not all were patented.

1831 Cylinder Machine — Patented
1832 Pulp Dresser — Patented
1834 Cutting Machine — Patented
1835 Drying Machine
1840 Trimming Machine

The paper industry owes John Ames a great deal. He is reputed to have done more than any other single man to further its progress. He worked and lived in Springfield until his death, January 24, 1890, at the age of ninety years.

☆ ☆ ☆ ☆

As members of the paper industry and residents of Springfield, we take great pride in John Ames. Like him, we, at Cheney Bigelow, are always at work serving the paper industry of the United States in the best way we can. We take pride that during this national emergency, we have also served our country to such an extent that a star has been added to our Army-Navy "E" Flag.

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PAPER
TRADE JOURNAL
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Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

The American Paper and Pulp Association and affiliated organizations, The Technical Association of the Pulp and Paper Industry, and The National Paper Trade Association, because of war conditions, have cancelled their conventions which were tentatively arranged to be held in New York, February 19-22, 1945.

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

PAPER OUTPUT AND CONSUMPTION

Paper is being well demonstrated as an essential material in the conduct of the war. Its uses have been so greatly extended that the production curve of the American paper industry may confidently be expected to continue steadily upward in the post-war years. The Government's requirements for paper has been and continues to be very large. Not all are in agreement that all the paper purchased by the Government is necessary or that much of its consumption is essential. The Government regards it as essential for the conduct of the war, however, and so long as large Government buying continues it must necessarily restrict the use of paper for home activities. Lend-lease and the rehabilitation plans of the Administration are reported to be extensive, although quantities allocated for these purposes are not definite public knowledge. The estimates of the paper needs appear so large at this date that the over-all supply seems inadequate. This estimate may, of course, be modified substantially with the end of the war in Europe, which would release substantial quantities of paper of Scandinavian manufacture. The American paper industry has set up an excellent production record over the war years. In 1944 it operated at a yearly average ratio of 88.4%, in 1943 at 87.8%, in 1942 at 90.4%, in 1941 at 97.45, and in 1940 at 85.6%. When peace returns, the current production ratio may be ample to supply all requirements, some believe, while others think the many new uses and developments in paper will result in a larger consumption of paper and paper products. Paper is serving well as a substitute for more expensive and scarcer materials. But there is no substitute for paper and certainly no other comparable material is so inexpensive or can be processed in a wider variety of useful forms.

In an estimate of United States paper production and consumption needs, the study recently issued by the United States Department of Commerce in Industrial Series No. 14, states in part as follows: The general problem in the United States is not one of restoring a war demoralized economy, but one of converting a much larger and, on the whole, more efficiently operated industrial economy from war to civilian production. Conditions affecting the production and consumption of wood pulp and paper in the United States are thereby totally different from those in European countries. For the most part, our pulp and paper capacity is in good physical condition and has no important reconversion problems created by the war. The emphasis will be largely on meeting expanded peacetime paper consumption needs and, in the case of wood pulp, the additional requirements for a rapidly growing list of other cellulose products.

In the first year after V-E Day the possibilities of production of both pulp and paper in the United States and Canada are limited chiefly by the use of the capacity in operating conditions on V-E Day. Some expansion of production facilities will occur during this first year, but its effect upon output will be little. In the second year after V-E Day, more new production can be expected, for then it is assumed the war with Japan will be over or drawing to a close, but the increases will still be relatively small. The elapsed time will not be enough for much added output from new major units or new mills. Moreover, it is probable that during the second year the normal submarginal mills will begin to fall out of the production line, especially those which require substantial expenditures for repairs and replacements. It is improbable that the net increase in capacity will be great in V-E 2.

In the third post-war year it is likely that a substantial net increase in capacity will occur, although the offsetting process will probably continue. Also, a substantial capacity increase will have grown out of the general repair and replacement programs which every mill in the industry will have to undertake when materials flow freely. Since 1942 little capacity has been added to the wood pulp industry. It is possible to arrive at a fairly reliable index of practical operating capacity by adding the rated or actual capacity of the facilities added after 1942 to the actual production records established during the first six months of 1942, a period in which labor, materials, and transportation were adequate and prices were favorable. This sum amounts to 11,244,000 tons of annual operating capacity in wood pulp on V-E Day. Realization of this figure depends upon increasing the flow of materials, particularly of pulpwood and full-time operation of every facility.

In the first year after V-E Day, the backward trek of labor from war production plants and from military service will gradually augment the labor supply for the industry and should be reflected in corresponding increases in output. It is assumed that two years will be required to bring wood pulp production to

this capacity and that about half of idle capacity as of V-E Day will be brought into production in V-E 1. Precedent for this assumption is ample in recorded experience after the first World War. Wood pulp production in V-E 1 is estimated at 10,658,000 tons. In V-E 2 there will be further improvements and expension in going concerns. There will likewise be eliminations. It is assumed that these processes will offset each other during the first two post-war years. Therefore, maximum United States wood pulp production in V-E 2 is estimated at 11,244,000 tons.

The third year after V-E Day is the first year in which a net increase in wood pulp operating capacity of substantial proportions can be expected. How much this will be is difficult to estimate, especially in the case of market pulp, for here numerous economic and political problems are involved, the solution of which may swing wood pulp production either up or down. Because of the time necessary to settle these problems, the net change may not be great. A net increase of 450,000 tons in practical operating capacity is set up in the estimate for V-E 3 over the estimate for V-E 2. This results in an estimate of United States wood pulp production in V-E 3 of 11,694,000 tons.

Paper Mill for Alaska Held Up

Reports received from Ketchikan, Alaska, indicate that business interests there are still negotiating with the Crown-Zellerbach interests in connection with the long-standing proposal to establish a pulp and paper mill at Ketchikan. It is stated that plans are temporarily in abeyance over the issue involving the granting of important territorial rights to the Indians in the area.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Dec. 30'44	61.0	Jan. 1	70.3
Jan. 6'45	81.0	Jan. 8	90.2
Jan. 13	88.7	Jan. 15	89.5
Jan. 20	87.1	Jan. 22	86.1
Jan. 27	88.4	Jan. 29	89.1
Feb. 3	*88.8*	Feb. 5	88.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	90.1	92.5	90.6	82.4	88.1
1945	*86.7*												

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	63.9	76.7	89.1	86.1	104.3	87.2	88.6	*86.7*
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
Dec. 30'44	57	Jan. 1	63
Jan. 6'45	80	Jan. 8	86
Jan. 13	95	Jan. 15	93
Jan. 20	94	Jan. 22	93
Jan. 27	95	Jan. 29	95
Feb. 3	92	Feb. 5	97

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	83	96	92	95	95	85	93
1945	*91*												

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

No Longer a Luxury...

In 1920, the National Automobile Chamber of Commerce opened its annual show in New York's Grand Central Palace with the announcement that the automobile industry was now producing "transportation." Here was recognition that the automobile was "here to stay"...no longer a luxury but a fundamental element in our national life! Prophetic indeed was this announcement. For in the next two decades the automobile proceeded to alter the entire pattern of American living.

Founded in 1920, Witco Chemical Company, Inc. has made important contributions to the growth of the automobile industry and many other industries through the development and improvement of chemicals, oils, pigments, asphalts and other basic materials. Among the various products Witco supplies to the paper industry are Lithopone, Mica, Ochres, Oxides and other essentials. Newest Witco development in this field is the special Carbon Black described at the right.

WITCO CARBON BLACK No. 11

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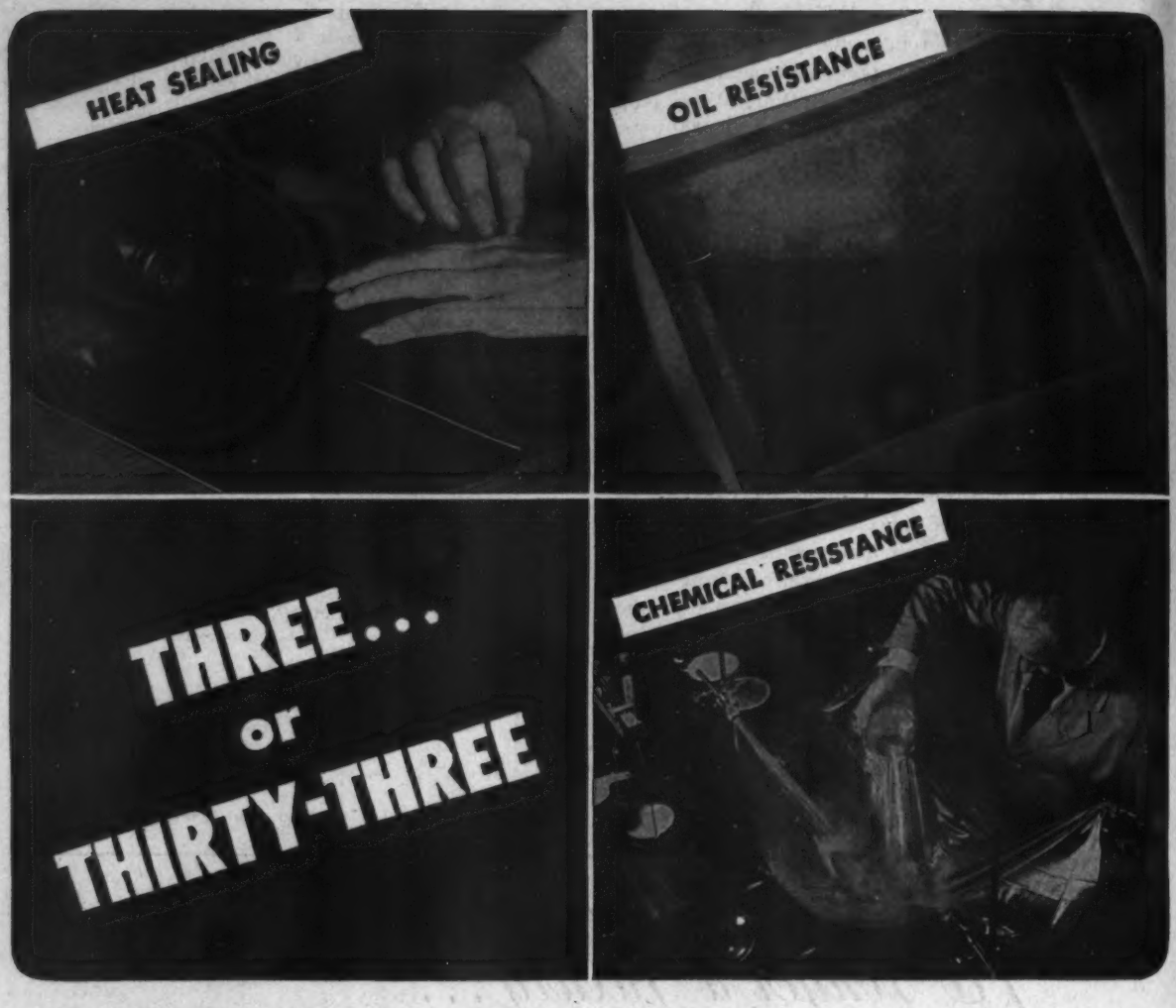

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122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Paraffin Wax Absorptiveness of Paper

TAPPI Tentative Standard T 467 m-45

This method is for testing waxing papers to find the amount of wax required to completely saturate the paper without producing any surface film.

Apparatus and Materials

1. *Analytical Balance,* sensitive to 0.01 gram.
2. *Oven,* capable of maintaining a temperature of 105 ± 2° C. throughout the interior.
3. *Blotting Paper.* Sheets of standard botting paper 6.5 by 11 inches, 0.0195 to 0.0205 inch thick, weighing 80 ± 4 pounds, 19 × 24 — 500, and having an absorptiveness to water of from 9 to 20 seconds when tested according to TAPPI Standard T 432 m.

Note:—The blotting paper used is that also specified in TAPPI Standard T 205 m and may be obtained from the Wrenn Paper Company, Middletown, Ohio, and from the Standard Paper Manufacturing Company, Richmond, Virginia.

4. *Steel Plates.* Sheets of cold-rolled steel having smooth, clean, plane surfaces, 4 by 9 by 0.25 inches.
5. *Photographic Tray,* 10 by 12 inches.
6. *Paraffin Wax,* melting point 130 to 132° F. (54.4 to 55.6° C.), A.S.T.M. Method D-87-42.
7. *Hot Plate* or *Steam Bath,* for heating the paraffin.

Test Specimen

Cut specimens, 3 by 8 inches, from the sample in such a way as to be thoroughly representative of it. At least four specimens shall be tested. They shall be conditioned for testing according to TAPPI Standard T 402 m.

Procedure

Melt the paraffin wax in the tray. Mark the felt sides of sheets of the blotting paper. Immerse the sheets of blotting paper in the molten paraffin wax maintained at a temperature of 71 ± 2° C., for 30 minutes, then hang them to drain in the oven, maintained at 105 ± 2° C., for 60 minutes, with the short axis of the sheets parallel to the bottom of the oven. Remove the sheets from the oven, cool them and trim them to 4.5 by 9 inches, cutting a 1-inch strip from each edge to insure even distribution of paraffin in the sheets.

Weigh each test specimen to the nearest 0.01 gram and place it between two sheets of the waxed blotting paper, with the felt side of each sheet of the blotting paper in contact with the test specimen. Place the pad thus formed between two of the steel plates, heated at 105 ± 2° C. and withdrawn from the oven immediately prior to use. Place the assembly at once in the oven and heat for 60 minutes at 105 ± 2° C. At the end of this period, remove the assembly from the oven, recondition the test specimens according to TAPPI Standard T 402 m, and then reweigh them. The difference between the weights of the waxed and unwaxed paper is the amount of paraffin absorbed.

Report

Report the amount of paraffin absorbed as a percentage of the unwaxed paper to the nearest whole per cent.

Additional Information

If the cold-rolled, machined steel plates are not available, the use of heavy plate glass is suggested as a substitute. If glass is used, sufficient weight should be added to provide a load of 2.5 pounds upon the specimen, to approximate the weight of the steel plate.

The chief variances in the use of this method appear to arise from temperature differences in various sections of the oven used. The use of an externally heated, forced draught oven is recommended, or of a large electrically heated, thermostatically controlled pulp oven. To check oven temperatures at various points the following periodical check is advised. A full load of four units of plates is placed in the oven, in the usual test positions. Maximum thermometers are sandwiched between sets of plates for 60 minutes. On the basis of information obtained from these tests, baffle plates can often be inserted to provide uniform temperatures at the various test positions.

This method has been approved as a tentative standard by the Paper Testing Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y. Reprints of this standard may be obtained from the Secretary at 25 cents each.

Alignment Charts

D. Van Nostrand Company, Inc., has just issued a 94-page book of Alignment Charts, Their Construction and Use by Maurice Kraitchik, professor of mathematics, New School for Social Research, New York City. The book provides a sound review of algebra, analytic geometry and determinants necessary for an understanding of the methods of nonographic chart construction. Applications are made in the field of chemistry, engineering, manufacturing and investments.

These charts are time-savers when a particular equation must be solved repeatedly, using different sets of values for the variables. The book deals entirely with the principles involved.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y. at $2.50 per copy.

Microcrystalline Waxes and the Paper Industry*

By John C. Dean[1]

Abstract

Heavy lubricating oil stock which is one of the products resulting from the distillation of crude oil is treated further to produce the microcrystalline waxes. These materials vary in their characteristics dependent on the processing procedure, and are classified according to their properties within certain physical limitations. The manufacturing process is described.

Microcrystalline wax, sometimes termed amorphous wax, was first used as a substitute for beeswax. For some time the paper industry has been the largest user, the principal application being in the manufacture of ordnance wraps.

There are three general types of wax treated paper; wet-waxed, dry-waxed, and laminated, which might be described as wax on, in, and between paper. Each phase is discussed in some detail and the application of microcrystalline wax is indicated.

Careful control is involved in the manufacture of laminated papers. Certain factors must be taken into account and to obtain optimum results the wax should always be applied to the sheet with the harder surface and the temperature so adjusted that the wax is only slightly above its congealing point at the combining rolls. A proposed equipment layout is also given.

Prior to the present world war in the days of free economy, microcrystalline waxes were described as being hydrocarbon waxes derived from petroleum, characterized by a relatively high melting point, a moderate degree of flexibility or ductility, a limited inherent tackiness, and a microcrystalline structure. When these waxes demonstrated their value, and were subjected to WPB (and later PAW) allocation, this loose definition no longer sufficed. Today they are described as (quote from Conservation Order PDO 19)—

> "a solid hydrocarbon mixture of molecular weight higher than paraffin wax, possessing plastic properties, separated entirely from that part of crude petroleum commonly designated as heavy lubricating and cylinder stocks, and having a minimum kinematic viscosity of 5.75 centistokes (45 Saybolt seconds) at 210°F., and a maximum penetration of 60 at 77°F. determined by ASTM method D5-25."

While this definition does not give all the characteristics of microcrystalline waxes, it is, nevertheless, all-embracing and effectively brings all "true" microcrystalline waxes under governmental allocation.

* Presented at the May meeting of the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry, Kalamazoo, Mich., May 4, 1944.

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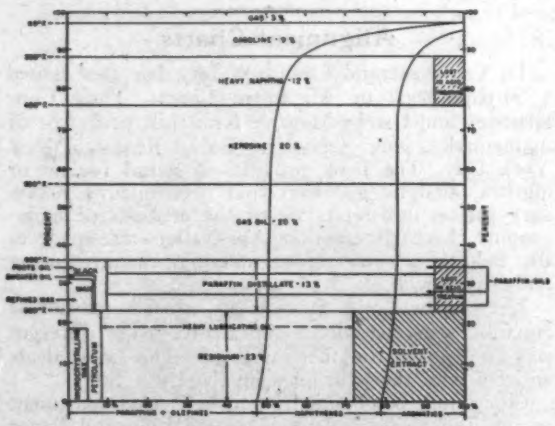


FIG. 1
Crude Oil Breakdown

History

Petrolatum has been known to the petroleum industry for a great many years, and has been employed for many useful purposes. However, it was not until 1926 that its true worth was found; for then the Vacuum Oil Company discovered that by removing excess oil from it, harder and higher melting waxes could be produced. The resultant products appeared noncrystalline in nature, and hence were often referred to as amorphous waxes. This term still persists until today, despite the fact that it was discovered very early that these new products had a definite but microcrystalline structure.

Microcrystalline waxes had very small beginnings. Their physical resemblance to beeswax frequently caused them to be designated as "mineral beeswax." The uses of beeswax, as for polish manufacture, electrical insulation, and printing inks were soon satisfied with microcrystalline waxes. Their unique physical properties also led to their use in rubber, as linings for containers of all types, and in a myriad other applications. Prior to the war there were at least two hundred individual uses for these waxes.

The papermaking, paper converting, and paper packaging industries have for some time been the largest users of microcrystalline waxes. Despite government restrictions on use, the waxes are still used primarily as paper coating materials. In fact it is their very utility for this purpose that is responsible for production which today amounts to over 120,000,000 pounds yearly.

Manufacture

In discussing the manufacture of microcrystalline waxes, it is well to start with crude oil to show the basic relationship which these waxes have to other petroleum products. Figure 1 represents a crude oil of mid-continent origin, and has boiling points (and percentages removed at these temperatures) plotted against the percentages of paraffinic, olefinic, naphthenic, and aromatic hydrocarbons present in a narrow cut taken at any point.

The distillation of crude oil removes successively, gas, gasoline, naphtha, gas oil, and wax distillate, and leaves behind a heavy residual lubricating stock.

As shown by Fig. 1, the wax distillate is the source of crude scale and refined paraffin waxes. These are the most paraffinic portions of this cut, and must be removed from it so that it can be made into a variety of light bodied oils, such as spindle oils and light process oils. This relationship should be kept firmly in mind, for it shows that paraffin wax differs from these oils only in relative paraffinicity. This slight chemical difference is responsible for its higher melting point, but in all other characteristics, including viscosity and volatility, paraffin wax is very little different from a light lubricating oil.

Paraffin wax is removed from wax distillate to lower the temperature at which the oily fraction will continue to flow. For the same reason, the residual lubricating stocks must also be freed of their higher melting constituents. This operation generally follows solvent refining (if this is to be used to remove the less chemically stable aromatic hydrocarbons) and resolves the residuum into dewaxed oil and petrolatum. This dewaxing operation is substantially a fractional crystallization, and is accomplished by dissolving the waxy oil in a solvent, chilling it to precipitate the waxes and removing these by filtration or centrifuging. The waxes derived from residual stocks differ from paraffin waxes in that they have a great affinity for oil. Thus they are obtained as a soft unctuous material known as petrolatum.

Petrolatum is then subjected to a deoiling operation, or second fractional crystallization, which results in the precipitation of microcrystalline waxes. Within the limits of the original crude oil, the melting points and hardness of these waxes can be controlled by variations in the ratio of solvent to petrolatum, and in the temperature of chilling. The crude microcrystalline waxes which are produced in this operation are generally quite dark in color. Lighter colored grades are finally obtained by percolation of molten wax through activated clays or bone char. Thus, within limits, microcrystalline waxes varying in melting point, hardness, and color can be produced from one basic raw material—crude petrolatum.

Reference to Fig. 1 now shows that microcrystalline waxes are related to refined paraffin waxes as well as to heavy lubricating stocks. The kinship to paraffin wax is one of similar paraffinic nature, whereas to lubricating oils it is one of a comparable boiling range and viscosity. Microcrystalline waxes are, therefore, paraffinic waxes, but are appreciably higher boiling than refined paraffin waxes and have greater viscosities in the molten condition.

Now to return to the PAW definition of a microcrystalline wax. Essentially it covers all products having Saybolt viscosities at 210° F. above 45 seconds, and needle penetration values below 60. The first characteristic is determined by the molecular weight or by the boiling point of the wax, and therefore demands that it be derived from a relatively heavy lubricating stock such as the residuum of Fig. 1. The latter characteristic is a measure of its softness or oil content, and is designed to distinguish microcrystalline waxes from petrolatums. To obtain a value below 60, the product must be relatively, oil-free—hence more paraffinic than a petrolatum. The empirical definition, therefore, very carefully surrounds the lower left hand corner of Fig. 1 which represents true microcrystalline waxes.

Wartime Uses

The paper industry has frequently been advised that the production of microcrystalline wax is at an all-time high. This perhaps gives rise to wonderment why none is available for civilian purposes. Obviously the answer is that these waxes have gone to war. Production is up—in fact it is six times that of 1939, but consumption for packaging of ordnance material alone requires nearly five times as much wax as was produced in 1939. The petroleum industry is anxious to regain civilian business, but it is doing its share in the war effort, and must be guided by the demands of the armed forces.

It might be well to outline briefly the application requiring the bulk of the microcrystalline waxes. This is known generally as "Ordnance Packaging" and involves two separate steps, each requiring wax. Spare parts for mechanized equipment and aircraft, and other metal articles which might be harmed by rusting must be packaged carefully to withstand the elements, all manner of rough handling, and even submersion in salt water for many weeks. To accomplish this, the part is first dipped in a rust-preventive compound designed for the immediate protection of the treated surface, and then enclosed in a wrap or bag of greaseproof grade A paper which prevents loss of rust preventive from the metal surface. The piece is next wrapped in grade C, or moisture-vaporproof paper made with microcrystalline wax. It is then placed in a paperboard box and wrapped again in type C paper, and finally is dipped in a bath of microcrystalline wax.

The grade C wrap requires large quantities of high quality product, since this sheet is thoroughly impregnated with straight microcrystalline wax. The wax must be soft enough to provide ductility at low temperatures, tacky enough to permit adhesion of two layers, yet must be dry enough to permit winding of the paper into a tight roll. The dip-sealing wax, likewise, must meet special requirements and demands high quality products. Thus only the poorer grades are left for civilian applications.

Uses with Paper

Approximately 80% of the production of petroleum waxes is used for the treatment of paper. The value of this treatment is that it provides paper with waxy coatings or impregnations which resist the passage of water or water vapor. Paper consists of countless cellulose fibers felted together and usually sized with rosin and alum. As a result, there is a continuous contact of cellulose to cellulose throughout the paper sheet with minute openings between the individual fibers. When water passes through a sheet of paper, it does so largely through these openings rather than along or through the fibers themselves. Therefore, a paper can be made water-tight by filling these openings with a material which is impervious to water.

Water vapor on the other hand can be transmitted by cellulose fibers as well as through the openings between them. In order to render a sheet of paper resistant to the passage of water vapor, it is necessary to provide a continuous film of a water vapor-impervious material which completely covers the cellulose fibers of the sheet as well as those which protrude above its surface. If the surface fibers or "fuzz" are not coated they can serve as wicks to absorb moisture from a humid atmosphere on one side of the paper and carry it along a chain of cellulose fibers to the other side where it can be given off to a less humid atmosphere.

These fundamentals are responsible for the fact that three general types of wax treated paper are

made today. These papers may be classed as: 1. wet-waxed paper, 2. dry-waxed paper, and 3. laminated paper.

When large quantities of microcrystalline wax again become available it is hoped that the paper and related industries will again be the largest consumers of them. These waxes are ideally suited for the treatment of paper in one or all of the above methods, which in simpler terms might be described as *on* paper, *in* paper, and *between* paper.

Wet-Waxed Paper

Wet-waxed paper is made by methods which deposit almost all of the wax coating on the surface of the paper, with only enough wax impregnated into it to provide a satisfactory bonding with the cellulose fibers. This paper carries a continuous wax film through which no fibers protrude, and therefore is moisture vaporproof. For this sheet to maintain its resistance to water vapor, it is essential that the continuity of the wax film be maintained at all times.

Paraffin wax is the most commonly used coating for wet-waxed papers, but in many applications it falls down because of its inherent brittleness. This is particularly pronounced at low temperatures where it becomes fragile, and where the wax film can be broken quite easily. Any break in the wax film exposes paper fibers which are free to absorb water vapor. Microcrystalline waxes are especially useful in overcoming this deficiency of the paraffins, since when they are blended with paraffin wax they impart a portion of their ductility to the mixture. The increase in ductility is roughly proportional to the quantity used.

There are a number of applications where such an improvement in ductility of the wax coating is essential. The packaging of frozen foods is probably one which will be of great importance after the war. Foodstuffs so packaged must be handled at temperatures as low as 0° F. and must be continuously protected against loss of moisture. If straight paraffin waxes are to be used for coating paper or packages for these frozen foods, the wax films on them will be subject to fracture and their protective action will be lost. Blends containing 25% of microcrystalline waxes are far superior to straight paraffin waxes for this purpose.

In this present war many articles and foodstuffs are shipped in such a manner that their packages are coated with a wet-wax film. This is true of dehydrated foods and field rations as well as ordnance equipment. It would be impossible to use straight paraffin wax for coating such packages because they are subjected to low temperatures and extremely rough handling. Field rations are, therefore, coated with wax blends containing additives which improve ductility. The most widely accepted coating composition is a blend of equal quantities of microcrystalline wax and refined paraffin wax. This blend is supplemented by substitute wax mixtures which give a quite similar performance. Ordnance packaging requires an even more ductile wax coating and for that reason it is necessary to use straight microcrystalline waxes. The grade C wrapping paper is typical of a wet-waxed sheet made with straight microcrystalline wax.

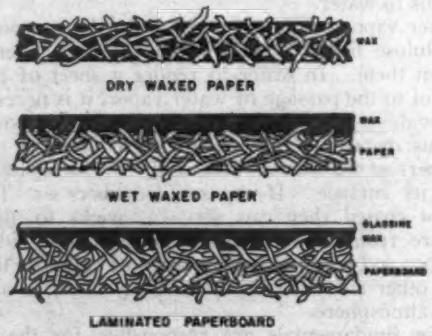


Fig. 2
Cross Sections of Wax Treated Papers

Dry-Waxed Paper

Dry-waxed papers as a general rule do not require large quantities of microcrystalline waxes. As already stated, this type of wax treatment imparts only water resistance. A continuous wax film is not formed, so there is no particular need for improving the ductility of the impregnant. Rough handling, creasing or folding, or exposure to low temperatures have no effects upon the wax which can be overcome by the use of a microcrystalline wax.

There is, however, one type of dry waxed-paper which can use microcrystalline wax to advantage. This is paper which must have a fairly high degree of grease-resistance. The passage of grease through paper is generally through the openings between the paper fibers and is not along the fibers themselves. Obviously the most grease-resistant sheets are those which consist of a continuous film of cellulose such as cellophane or glassine, but other papers can approach these grease-resistant sheets if they are impregnated with an oil-resistant substance.

If a sheet is thoroughly impregnated with a material of low oil solubility, grease, fat, or oil can pass through the paper only after it has dissolved enough of it to develop openings between the fibers. Obviously, therefore, products which are the least soluble in these nonaqueous substances will be most effective for greaseproofing purposes. Microcrystalline waxes are materials which are only limitedly soluble in oils, fats, and greases, and hence are useful as greaseproofing agents. The solubilities of petroleum waxes in fats and oils are directly related to their melting points, e.g., a wax melting at 133° F. is only half as soluble as one melting at 125° F. When the melting point is increased to the microcrystalline wax range the difference is even more pronounced. A wax melting at 165° F. has only one twentieth the solubility of the one melting at 133° F. This disproportionate effect of melting point permits a fairly greaseproof paper to be produced with conventional microcrystalline waxes.

Naturally there are other factors which affect greaseproofness. The thickness of the wax barrier is of consequence, since if a thick film of impregnating material is present, grease or oil will require a longer period of time to dissolve away enough of it to develop the openings between the paper fibers. Temperature also has an effect because the solubility of wax in oil increases as the temperature is raised.

Laminated Paper

Laminated papers are specially processed sheets which consist of two or more layers of paper bonded together with an adhesive. A number of water soluble substances were once used as laminating agents, but today many of them are being replaced with microcrystalline waxes to take advantage of the moisture vapor-resistance of these materials. Because of their unique construction, laminated papers have many of the advantages of both wet- and dry-waxed papers.

A continuous wax barrier is present, as is the case with wet-waxed paper, yet the wax film is protected on each side so that its continuity cannot be destroyed by careless handling or scratching.

Many combinations of paper and laminating agents are possible, but all may be grouped roughly into three basic classifications: I. A hard surfaced sheet bonded to a hard surfaced sheet, II. A hard surfaced sheet bonded to an open sheet, and III. An open sheet bonded to an open sheet.

The first group is composed almost entirely of transparent or translucent papers such as glassine or cellophane. These grades are used largely for the packaging of foodstuffs, particularly where their transparency is needed to permit an inspection of the contents of the packages.

The second group is more diversified and comprises papers made by laminating either glassine or parchment to such sheets as paperboard, or kraft and sulphite papers. These products are employed in many packages such as doughnut and cracker boxes, paper cans, wrappers for paperboard cartons, and certain meat wraps.

The third type of laminated paper is showing the greatest development at the present time, due largely to shortages in foils and light wrappers. In general, it is only lightweight papers such as sulphites or krafts which are employed in their manufacture. Many new uses for these papers may be expected in the future after the difficult laminating technique has been mastered.

Laminated papers are useful for a number of reasons. First, they may consist of two different types of paper, and thus have the advantages of both. Second, it is possible to obtain a continuous moisture-resisting wax film with the use of lesser quantities of wax than are required for other waxed papers. Third, by using a grease-resistant paper as one of the plies, it is possible to obtain both moistureproofness and greaseproofness. Fourth, a relatively moistureproof package can be prepared without having a wax film exposed to either the contents or to the exterior.

Paper Used for Laminated Sheets. Careful consideration should be given to the selection of paper used for laminating. For these laminated papers to be effective, it is essential that they contain an unbroken wax film through which there is no continuous chain of cellulose fibers. As with wet-waxed papers, the wax which is impregnated into the paper serves no useful purpose as a moisture vaporproofing agent. Consequently a hard, well sized paper or paperboard should be employed where possible. Such papers will absorb lesser amounts of wax than more open sheets and will reduce wax consumption. The slight additional cost of these improved papers will usually be counterbalanced by an appreciable savings in wax. Furthermore, such papers materially simplify the operation of laminating equipment.

Functions of Microcrystalline Wax in Laminating. The wax employed in laminating plays a dual roll. It provides the moistureproof barrier and also serves as the binder for the layers of paper. Even paraffin waxes would provide a satisfactory barrier, but these waxes do not possess adequate adhesiveness; and as already stated, they are not sufficiently ductile to maintain a continuous wax film. Microcrystalline waxes are particularly suitable for laminating because they are adhesive substances, and because they are plastic and flexible.

There are several fundamental considerations which must be given to a wax to be used for laminating. The bond which is obtained with it must be sufficiently strong so that the two layers of paper can be separated only with difficulty. If a two-ply laminated sheet is separated, there are five points where rupture may take place. These are in either of the two layers of papers, at the bond between either of them and the wax, or in the wax itself. Rupture will normally occur at the weakest of these points.

Papers of type I, in which two hard surfaced sheets are bonded together require a laminating agent having exceptional adhesiveness. These papers possess smooth surfaces and have no exposed fibers to which wax may bond itself. Thus a wax must be chosen which will readily adhere to such surfaces even if a sacrifice must be made in its tensile strength. Normally, a well bonded sheet of type I will break apart *in* the wax layer rather than at bond between the wax and the paper.

Laminated sheets of type III are substantially the reverse of type I. They are composed of layers of paper to which wax can be bonded quite firmly. Thus exceptional adhesiveness is not of such great importance. Instead, waxes for this type of laminating should have the highest possible tensile strength to prevent fracture in the wax film. These sheets generally tear in the paper, since this is the weakest portion of the finished sheet.

Sheets of type II which are made of a combination of papers, must be bonded with a wax of intermediate characteristics. This wax must have sufficient tackiness to adhere to the hard surfaced sheet, yet must have enough tensile strength so that it will not break in the wax film itself. Separation of these laminated sheets will normally occur at the bond between the wax and the hard surfaced paper.

Manufacture of Laminated Paper

The lamination of one layer of paper to a second is accomplished by applying molten wax to one of the sheets and gluing it to the second by the application of pressure. This second step is usually accomplished by a set of squeeze or combining rolls. The operation must be so conducted that a continuous wax film results and the two sheets are firmly bound together. To obtain optimum results there are two basic rules which should be carefully observed.

1. The wax should always be applied to the sheet of paper having the harder surface.
2. Temperatures should be so adjusted that by the time the waxed sheet reaches the combining rolls, the wax is only slightly above its congealing point.

The first of these rules is predicated upon the fact that if wax is applied to an open sheet it becomes rapidly absorbed, and excessive quantities will be needed to insure a completely continuous film. This rule is particularly applicable to laminations of type II, and especially to those involving glassine paper. Since glassine paper is resistant to wax, none of that which is applied will be absorbed by the paper. In addition, the application of wax to this sheet gives it sufficient time before it congeals to become firmly bound to the paper surface.

The second rule is based upon the fact that accurate temperature control is essential in obtaining the strongest possible bond. This can be accomplished only if wax solidifies at the very instant the second sheet is brought in contact or shortly thereafter. If the temperature of the wax on the coated sheet is too high, excessive penetration into the unwaxed sheet will occur before the wax congeals. Conversely, if

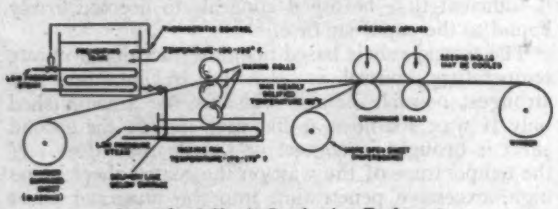
the wax has already congealed before it reaches the combining rolls, it will not penetrate sufficiently into the unwaxed sheet to produce a strong bond. Optimum results will be obtained if the stated conditions have been developed when the two sheets of paper are brought together at the combining rolls. The unwaxed sheet will be colder than the one which has been coated, and on contact with it will rapidly remove heat from the nearly solid wax. Bonding to the uncoated sheet and a setting of the wax binder will occur at practically the same instant.

Production of high quality papers can best be obtained if the equipment has been assembled for that specific purpose. However, it is frequently necessary to modify existing equipment to conduct this operation, but if this is done, the modified apparatus should have certain essential features. These are illustrated by Fig. 3 which represents a suggested design for laminating equipment. Briefly these are:

1. A thermostatically controlled preheating tank for melting the wax, preferably heated with low pressure steam to avoid oxidation of the wax. The temperature in this tank should be somewhat above that of the waxing pan to compensate for heat losses in the feed line to it.
2. A thermostatically controlled waxing pan, also heated with low pressure steam. Accurate control of the temperature at this point is essential for satisfactory lamination.
3. A two- or three-stand set of rolls, the lowest of which serves as the fountain roll to feed wax to the underside of the first sheet. These rolls need not be heated, but if they are, they should be controlled thermostatically.
4. A set of combining rolls at which pressure may be applied. This may consist of one or more groups of rolls depending upon their size and the pressure which they produce. Generally, heat should not be used with these rolls. In some instances it is desirable to cool the second set of rolls if more than one is in use.
5. Two feed rolls and one winder roll. These should be so located as to permit easy passage of the paper under constant tension through the equipment.

Because of the number of variables involved, it is impossible to recommend set conditions of operation. However, if the two basic rules mentioned above are carefully observed, trial-and-error experiments with the paper stocks and the waxes in question will very readily establish the optimum conditions of operation.

The most crucial step in the entire laminating operation occurs at the combining rolls. Hence all variables must be adjusted to provide the correct conditions for bonding at this point. The temperature of the wax in the waxing pan will be determined by the distance between the waxing and combining rolls and by the speed of the machine. With the operation of average equipment this will be about 15°



Example of Simple Laminating Equipment
FIG. 3

above the melting point of the wax. The temperature of the preheating tank will then be controlled by the temperature of the wax in the waxing pan, as well as by the throughput of the machine. The level in the waxing pan should also be so coordinated with the speed of the machine as to apply the correct quantity of wax.

The paths which the papers travel should conform closely to those shown in Fig. 3. This is particularly true of the sheet to be waxed, which should preferably pass through the nips and middle roll of the three roll stand. Greater control can be obtained with three rolls than two, although if only two are available, satisfactory operation can be obtained.

Frequently, laminated papers will develop wrinkles or a "curl" after standing for a short while. This is particularly true of paper which has been cut into sheets. This is often ascribed to improper operation of the equipment, but more often it is the result of improper handling of the base stocks. Paper readily takes on or gives up moisture to surrounding atmosphere and changes its dimensions in so doing. Glassine and chipboard have appreciably different rates of moisture change, so that if these sheets are laminated together, unequal stresses may be set up in them which may result in the formation of a curl. This can be overcome to a large degree by aging the two papers for several days in the same atmosphere before they are laminated.

Coverage Obtainable with Microcrystalline Wax

Wax consumption in laminating will vary appreciably depending upon operating conditions and upon the paper stocks used. With optimum operation, papers of type I should require between 2 and 2.5 pounds of wax per 1,000 square feet. Papers of type II have been successfully laminated with as little as 3 pounds of wax per 1,000 square feet, although a more average figure would be 3.5 pounds. This coverage is obtainable only with high grade paperboards, for if a cheap board is employed, the wax requirements may run as high as 7 or 8 pounds per 1,000 square feet. This additional wax consumption is indicative of the losses which may result from the use of a poor grade of paper. Rates of consumption for papers of type III will vary considerably, but will generally range from 4 to 10 pounds of wax per 1,000 square feet.

Future Supply

Microcrystalline waxes have already demonstrated their versatility as paper treating materials. Their use in the prosecution of this war has resulted in tremendously expanded production and a widespread knowledge of their properties and utility. Since increased production of these waxes was caused by a war-time demand which will largely disappear in the post-war period, large supplies of material will be available to the paper industry.

Many manufacturers of microcrystalline waxes have found ways of improving quality of product, but because of the necessity of maintaining production, have been unable to offer such materials at this time. Competition resulting from the war-accelerated expansion of manufacturing facilities will force an improvement in quality. This will make available waxes of higher melting point and greater flexibility at low temperatures. Both of these changes in characteristics will be helpful in the manufacture of improved coated, impregnated, and laminated papers.

The Streambarker*

By E. C. Shaw[1]

Abstract

The construction and operation of the hydraulic barking equipment known as the Streambarker is presented.

Considerable interest has been manifested during the last few years in the new development of washing and barking pulpwood sticks by the hydraulic method as developed by the Allis-Chalmers Manufacturing Company under the trade name of Streambarker, many of which are now in successful operation producing results far in excess to that originally thought possible.

The engineers of the company which developed this equipment have long realized the need of a better and more economical method of cleaning pulpwood sticks and removing the bark and several years ago experiments were started to see just what could be done in this line. Having at their disposal all of the necessary hydraulic equipment and the services of competent mechanical and hydraulic engineers, work was started by collecting practically all species of wood used in the manufacture of pulp, cut at various times of the year in order to determine the proper volume of water, the pressure required, the shape of the nozzle tips, and the distance of the nozzle tip from the pulpwood sticks in order to produce the most effective work with the proper dispersion of water to the bark surface.

After several years of experimental work done with full scale pump and equipment but with manually operated device for holding and revolving the pulp wood sticks, the proper hydraulic jet conditions were definitely determined and it then became necessary to design a machine which would both revolve and convey the sticks of various diameters and irregularity through the machine and under the pressure jets in a continuous flow.

Because of the fact that it is impractical to sort pulpwood sticks to even diameter it became necessary to design a machine that would handle sticks varying from 4 to 18 inches diameter and so constructed that the surface speed of both large and small diameter sticks would remain constant and that all diameter sticks would follow through the machine consecutively end to end.

Construction

Bed Rolls

This was accomplished by the use of two bed rolls, running in the same direction 24 inches diameter and 10 foot long, one of which is fluted and the other with spiral threads placed parallel to each other in a horizontal plane with approximately 0.75 inch space between surfaces and allowing the sticks to travel in the crotch of these rolls.

The speed of each roll is controlled independently by a variable motor drive and by running the spiral roll faster than the fluted roll both rotation and forward motion of the stick is obtained. If the speed of both rolls were the same only rotation of the stick would take place but by running the spiral roll faster than the fluted roll both rotation and forward motion of the stick is attained. By varying the differential of roll speeds any degree of rotation and forward travel can be had and adjusted to suit the class of wood to be barked to produce the quality and maximum capacity of the machine.

Feed

In the design of this barker a special self-centering feed works is provided to convey and enter the sticks into the crotch of the bed rolls and consists of a specially designed wing type bed chain with independent variable speed motor drive and so designed with the wing of chain having the same radius as the rolls and placed in the same horizontal plane so that all diameter sticks will enter the crotch of the bed rolls in a straight line. The speed of the feed chain is adjusted to suit the forward motion of the stick on the bed rolls.

The sticks entering the barker are approximately 6 inches apart and are held in position while going through machine by three spring loaded baffle plates which bear on the upper surface of the sticks with sufficient pressure to hold them in position in the roll crotch but not enough pressure to prevent them from rotating. A similar baffle plate is used directly above the sticks entering on the wing type feed chain.

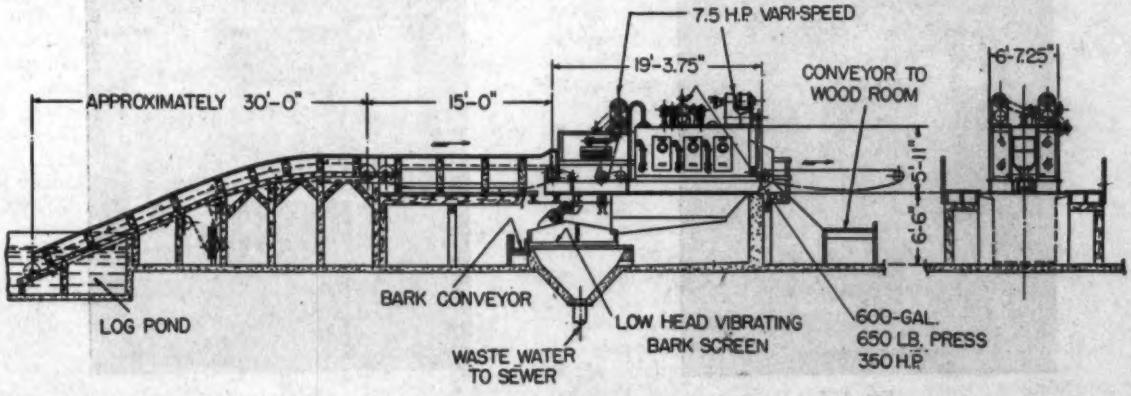


Fig. 1
Plan of Hydraulic Barker

* Presented at a meeting of the Empire State Section of the Technical Association of the Pulp and Paper Industry, Glens Falls, N. Y., Nov. 17, 1944.

[1] Engineer in Charge, Saw and Pulp Mill Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

The action of the baffle is controlled by spring-loaded air-cushioned cylinders which maintain the proper pressure on the sticks, cushion the baffles when dropping to a smaller diameter stick and prevent undue vibration in the baffle plates.

The bed rolls are made up of sectional abrasion resisting cast iron with machined bearing surfaces and edges and of equal weight to maintain balance and are secured to machined cast steel supporting heads with special bar locking nuts. These plates can be removed without taking out the bed rolls through the side or end openings in the housing.

The bed roll and baffle bearings are sealed self-aligning roller type and are mounted on the outside of machine. All other bearings are slow speed and are babbitted sleeve type also mounted on the outside of machine.

Housing

The size of the barker without the pumping unit is approximately 6.5 feet wide by 6 feet high and 20 feet long, weighing 40,000 pounds, and is constructed of heavy welded steel plate and structural steel rigidly reinforced to withstand the severe service and shocks to which it is subjected. The machine is designed with a heavy steel hopper underneath the frame to collect the waste water and bark and deliver it onto a low-head vibrating screen or the conventional bull screen with drag chain and is so designed that the discharge can be placed either at the front or back end of the barker.

Large water-tight doors are built into the sides of the barker housing for easy access to the inside working parts of the machine when necessary and flood-lights illuminate the interior so that the barking action can be seen at all times. Heavy pipe guards placed directly above the center of each roll prevent any sticks leaving the roll crotch should they become displaced. Hinged side baffles prevent the splash of water and keep it confined within the barker housing. A sheet rubber shield placed inside the barker housing at the discharge end prevents water from splashing out of the discharge opening.

Nozzles

The barker is equipped with three specially designed nozzles and pressure tips placed in the top of the machine so that the water streams are directed downward in the center of the sticks so that the elliptical pattern of water dispersion covers the bark surface most efficiently.

Fig. 2
Side View Showing Drive on Feed

The barker can be furnished with drives for the above using d.c. motor and rheostat controls for speed changes if desired by customer.

The discharge spout on the barker is equipped with a V-shaped idler drum for gravity discharge but chain wheels and chain can be substituted to convey the sticks from the barker in a straight line when necessary.

The pumping unit necessary for operating the barker consists of a high head centrifugal pump discharging 600 gallons per minute at 650 pounds gage pressure and can be directly connected to a 350 hp. 3550 r.p.m. motor or to a steam turbine as desired by the customer. In cases of solidly frozen wood it is sometimes desirable to use a booster pump in the suction line to raise the pressure to 750 pounds but it has been found that this pressure should not be exceeded as damage to wood fiber may take place.

In cases where it is necessary to repump the water for operation of the barker it is necessary to install a settling tank to remove the solids and all abrasive matter before entering pumping unit.

The barker can also be furnished with Diesel driven pump and Diesel electric power for 7.5 hp. motors on machine where necessary for woods operation. The barker is so built that it can be knocked down

Fig. 3
Feed End

Fig. 4
Discharge End

and moved with very little trouble and can be mounted on a timber foundation.

Capacity

Based on actual experience the barker will deliver an average of 10 cords of clean sticks per hour based on ninety sticks 4 foot long per cord.

This will vary depending on seasonal conditions and species of wood and records show cases where 14 cords are cleaned with a very small percentage of rejects and that all rejects never make more than a second pass through the machine.

The machine is designed to bark and clean the general run of reasonably straight pulpwood sticks from 4 to 18 inches diameter and either 4 or 8 foot long, and the term "reasonably straight" does not mean that all sticks must be round and free from knots and irregularities in shape, but rather that the extremely crooked pieces which cannot be revolved in the bed rolls will have to be thrown out, but this is a very small percentage and can be ignored.

Because of the fact that the pulpwood stick entering the barker does not remain in contact with the water but a few seconds, the bark delivered from this machine is not hydrated as much as that which comes from barkers of the wet drum type and, therefore, is more fit for fuel purpose.

There are seven of these units in continuous operation and one in Canada all of which are performing satisfactorily. There are also ten barkers under construction at the present time, seven of which are contracted for and will be put into operation within the next few months.

In addition to the equipment as described above for use on pulp wood sticks, units have also been designed for the following purposes: for barking slab wood and edging strip to utilize saw mill waste for pulp, for barking round logs from 18 to 30 inches in diameter by 20 feet long and a similar machine for handling logs 3 to 5 feet in diameter by 30 feet long, for barking long poles 20 inch butt by 100 feet long to be used for piling.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

M. A. Buchanan, research associate, the Institute of Paper Chemistry, Appleton, Wisconsin, a 1933 graduate of the University of Iowa.

Jules P. Kovacs, chief engineer, Purolator Products, Inc., 91 Empire Street, Newark, N. J. He obtained his degree from the Newark College of Engineering.

Joseph J. Maccolini, laboratory technician, Continental Diamond Fibre Company, Bridgeport, Pa.

Alan W. Oliner, graduate assistant, New York State College of Forestry, Syracuse, New York, a 1944 graduate of New York University.

Robert C. Palmer, vice-president and Chemical Director, Newport Industries, Inc., Pensacola, Fla., a 1910 graduate of the University of Missouri.

Lloyd M. Perry, chief chemist, Nashua Gummed and Coated Paper Company, Nashua, N. H. Attended Wesleyan University.

Roland M. Schaffert, supervisor, Graphic Arts Research Division, Battelle Memorial Institute, Columbus, Ohio, a 1933 graduate of the University of Cincinnati.

J. Homer Winkler, research engineer, Battelle Memorial Institute, Columbus, Ohio, a 1925 graduate of George Washington University.

J. Melvin Kernan, plant manager, Boston Division, Container Corporation of America, Medford, Mass., a 1929 graduate of the Armour Institute of Technology.

Kalamazoo TAPPI Discusses Printing

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at the Columbia Hotel, Kalamazoo, Mich., on Thursday, February 1st. About forty attended. J. A. Beierwaltes of the E. J. Kelly Company talked on "An Approach to the Analysis of Printing Problems". Following the talk a discussion forum was conducted by Merle P. Wilkins of the Bryant Paper Company. C. W. Povenz of the Crescent Engraving Company and A. I. Zupanic of the Upjohn Company, local printing authorities participated in the discussion.

Those present included: P. D. Applegate, Wm. H. Barrett, Ray Barton, Jack Beierwaltes, A. W. Cole, E. T. A. Coughlin, W. G. Curry, C. F. Davis, G. M. Deane, D. R. Erickson, Merton S. Fogerty, B. E. Freeman, R. C. Germanson, F. R. Hamilton, W. F. Hathaway, James J. Harrison, J. A. Heenan, Chas. P. Kirchen, W. A. Kirkpatrick, J. L. Kubica, Frank Libby, J. O. Logan, F. D. Long, Gordon Markle, Lee H. Mimms, D. Moffett, H. Nendorf, C. N. Povenz, A. L. Sherwood, Hugh Smith, W. R. Tobin, Joe Waber, Ward D. Wheeler, Frank Whittington, Merle R. Wilkins, Leo A. Willoughby, James A. Wise, and A. I. Zupanic.

TAPPI Notes

A. R. Lukens, formerly of Thompson, Weinman & Company is now with the Pigment Research Laboratories, 11 Windsor Street, Cambridge, Mass.

H. R. Wemple is now vice president of the Texas Gulf Sulphur Company.

George D. Lord, formerly of the Brown Company is now technical representative, Heavy and Chemicals Dept., American Cyanamid and Chemical Corporation, Philadelphia, Pa.

Rexford H. Bradt, formerly of the Corn Products Refining Company is now in the Metallurgical Laboratory, Classified War Research, University of Chicago.

The TAPPI Pacific Section meeting scheduled for March 20th at Bellingham, Wash., has been cancelled in conformance with the request of the Office of Defense Transportation.

Henley's Formulas

The Norman W. Henley Company has recently published Henley's 20th Century Book of Formulas, Processes and Trade Secrets, edited by Gardner D. Hiscox and T. O'Conor Sloan.

This book of about 900 pages, is a compilation of about 10,000 formulas or recipes, useful in particular to research chemists but of value also to almost anyone. It covers such subjects as adhesives, antiseptics, bleaching, cements, dyes, photography, inks, lacquers, lubricants, oils, paints, paper, plastics, soaps, waterproofing and wood. The sections on paper deal primarily with methods of treating and coating papers.

It is not a technical book.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., at $4.00 per copy.

Use of Sulphate Turpentine as a Chemical Raw Material*

By S. G. Norton[1]

Abstract

Pinene, which is derived from the crude sulphate turpentine obtained as a byproduct from the sulphate process, is the basis of numerous products of commercial value. Insecticides, solvents, perfume bases, plasticizers, and synthetic pine oil are a few of the products which can be prepared from it.

A large and important group of organic compounds comprise the class known as "terpenes." Among these are the principal constituents of essential oils and perfumes and they form the basis of the essential oil industry.

The pinenes, both alpha and beta, are terpenes. Pinenes are found in many natural oils, but principally in turpentine. They are very reactive and capable of being converted into a long list of other terpene compounds; thus they provide a suitable starting point for the synthesis of numerous materials familiar in the essential oil field, as well as for many synthetics entirely new to commerce.

Gum turpentine, steam-distilled wood turpentine, and refined sulphate turpentine are all suitable sources of pinene for chemical use. Price and availability dictate which shall be used.

Crude sulphate turpentine, a byproduct of the sulphate process for making paper pulp, has been increasingly used in recent years as a source of pinene for chemical synthesis.

The Hercules Powder Company, a pioneer in the use of pinene for commercial production of synthetic materials, has devised a process capable of removing the undesirable impurities from crude sulphate turpentine in such a manner that the product is entirely suitable for synthetics manufacture. This company however, does not sell refined sulphate turpentine as a commercial article.

Crude sulphate turpentine varies widely in its composition. Locality, type of soil, age and variety of pine trees, and variations in the pulpmaking process all affect it. Average analyses would be about as follows:

Alpha-pinene	50-60%
Beta-pinene	15-20%
Monocyclic terpene hydrocarbons	10-15%
Sulphur compounds and impurities	10-15%

As an aid toward obtaining uniformity in the refining process, as well as in the product, crudes from various sources are blended before processing.

Research, at the Experiment Station in Wilmington, Delaware, and at the plant laboratories, has developed a great many products derived from pinene. Some of these are made and sold on a large scale at the present time; others at present are available only in sample quantities. Reactions involved in the production of these materials include isomerization, hydration, dehydration, esterification, etherification, oxidation, and polymerization.

Pinene may be isomerized by appropriate catalytic means into camphene. This, in turn, is converted into a complex thiocyanoacetate derivative sold under the trade name of "Thanite*" which is one of the most powerful and generally effective insecticides known. Since the natural insecticides, pyrethrum and rotenone, have been largely cut off by war-time conditions, this material has proved invaluable to the armed forces as well as for household and cattle sprays.

Another form of catalytic isomerization of pinene yields a mixture of monocyclic terpene hydrocarbons. From this material valuable solvents for paint and enamel formulation and for rubber reclaiming compounds are produced.

Pinene is hydrated to produce synthetic pine oil. Like its natural prototype, synthetic pine oil consists largely of terpineol, together with some secondary alcohols, principally isoborneol. It has essentially the same industrial uses as natural pine oil.

Pinene may be further hydrated to terpin hydrate. This crystalline product, white and practically odorless, has long been used in medicine as a cough remedy. In recent years several industrial uses have appeared which call for quantity production.

Terpin hydrate, when dehydrated catalytically, yields a mixture of terpineols in which beta-terpineol is the predominating constituent. This is the commercial "Prime Terpineol," a delicate perfume of the lilac type. To those who deal in crude sulphate turpentine, the production of a perfume therefrom may seem revolutionary, but it is only one of the numerous substances yielded by this product.

A wide variety of ethers can be prepared from pinene by the direct addition of suitable alcohols. This type of catalytic etherification is covered by patents. The products are sold as Terposols.* One is a methyl ether which is similar to pine oil in its physical properties and solvent power, but it also has certain special applications as a solvent. Another is a mixture of terpene glycol ethers which is a very powerful solvent and plasticizer. It is relatively high boiling and is used in several manufactured products.

The above examples of pinene synthetics are all produced commercially. Many more have been developed and are awaiting post-war introduction.

Any source of pinene to be used as a chemical raw material must be available at a relatively low price. Unlike turpentine, which is subject to wide market fluctuations, most of the chemical products manufactured from pinene are sold at comparatively stable price levels. Since organic syntheses, such as those described, rarely give quantitative yields and are usually accompanied by problem byproducts, and since in many cases expensive reagents and equipment are required, profitable operation demands a starting material of moderate and uniform cost. If this requirement is met, almost unlimited quantities of such materials as crude sulphate turpentine may be consumed by chemical industry. On the other hand, undue price increases or speculative tendencies may be counted upon to dry up this market rapidly.

* Presented at the meeting of the Byproducts Committee of the Technical Association of the Pulp and Paper Industry held in Savannah, Ga., October 18-19, 1944.

[1] Hercules Powder Co., Brunswick, Ga.

* Reg. U. S. Patent Office.

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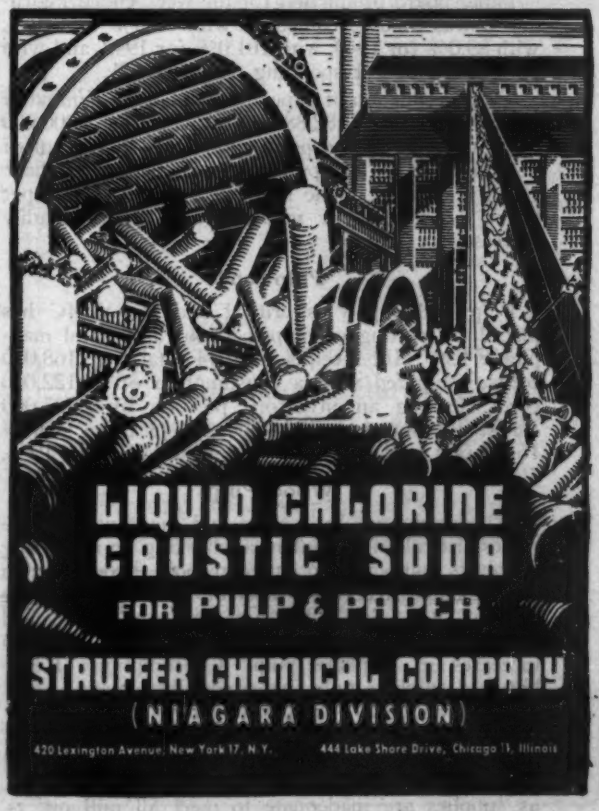

New York Paper and Pulp Market Review

Tighter Paper Supply Is Expected This Year With No Improvement Forseen Until Near End of 1945—Wood Pulp Supply Critical —Cotton Cuttings Active—Mills Need More Waste Paper Now.

Office of the PAPER TRADE JOURNAL, Wednesday, February 15, 1945.

Wholesale demand for paper continues in excess of supply in all major items. The large requirements of the Government for all its needs cannot be met without restricting the use of paper further for civilian consumption. Current reports from many manufacturers' representatives, jobbers, and general paper merchants reflect the great difficulty in obtaining sufficient supplies, without which the problem of paper distribution cannot be solved. No prospect of any material improvement in the home front supply situation is indicated in current reports, which reflect the expectation of a more serious shortage of paper for civilian consumption this year.

The index of general business activity for the week ended February 3 declined to 142.2, from 146.1 in the previous week, compared with 149.3 for the corresponding week last year. The index of paper board production was 145.9, compared with 154.1 for the previous week, and with 148.9 for the corresponding week last year.

Paper production for the week ended February 3 was estimated at 88.8% compared with 88.4% for 1944, with 87.2% for 1943, with 103.7% for 1942, and with 86.8% for the corresponding week in 1941.

Paper board production for the week ended February 3 was 93.0%, compared with 97.0% for 1944, with 89.0% for 1943, with 101.0% for 1942, and with 79.9% for the coresponding week in 1941.

Total production of paper for 1944, as preliminarily estimated, was 17,182,888 tons, which is 1,000,000 tons under the record production of 1941 Output of newsprint, book, wrapping, and tissue papers have steadily declined in the last three years, while paper board production in major grades have steadily increased.

Pulpwood

Pulpwood supply is critical and the WMC has placed the cutting of pulpwood on the critical manpower list. Mill receipts in 1944 totaled 16,168,000 cords, compared with a consumption of 16,122,000 cords, leaving an inventory position of 2,737,000 cords. Receipts were 13% above 1943 and a goal of 16,000,000 cords has been set by the WPB for 1945.

Wood Pulp

Wood pulp supply is short and the situation continues critical. The bottleneck checking an increasing supply is manpower to cut pulpwood. Production in 1944 totaled 10,086,890 tons, or 916,000 tons more than in 1943. Small decreases occurred in bleached and unbleached sulphite, and in soda pulps, with increases in sulphate pulp. Consumption of unbleached sulphate pulp increased substantially.

Rags

Mill demand for cotton cuttings continues heavy and the market position is very strong at this date, as supplies are inadequate to meet all mill orders. Prices are strong at ceiling levels.

Old cotton rags are in active demand at this date. The roofing grades are most active. Old whites, blues and thirds are in good demand. Prices are firm in all grades at ceiling levels.

Old Rope and Bagging

No important change has been reported in old rope this week. Manila fiber continues scarce in relation to needs and prices are firm.

Scrap bagging continues to reflect a possible improvement in trading activity but reports at this date indicate no material change from the limited volume of trading last week. Prices are soft and continue nominal.

Old Waste Paper

Mill demand for paper stock continues urgent and the supply situation is critical. Some mills report inventories equal to 18 days' supply, with some eastern mills a little better situated. Prices are strong at ceilings.

OPA Supplementary Order - 103, Prohibition Against Waste Paper Procurement Practices, replaced Amendment No. 2 of RPS 32, on February 10, 1945. The action is taken, the OPA stated, to preserve normal business methods prevailing in the waste materials industry and to correct existing speculative and manipulative practices.

Twine

Demand is fair to moderate at this date for most grades of twine. Prices are firm and continue to reflect only minor changes from prevailing quotations.

Allis Chalmers Changes

U. E. Sandelin has been appointed manager of the Allis-Chalmers Manufacturing Company's Seattle, Washington district office, it was announced recently by Frank Angle, manager of the company's 60 district and branch offices. Mr. Sandelin succeeds A. J. Schmitz, who has been named Pacific regional manager.

Before being appointed to the Seattle office, Mr. Sandelin was attached to the Allis-Chalmers district office in Washington, D. C. for three and one-half years. He also will supervise the Spokane, Washington, branch office.

Mr. Sandelin, 45, was born in Finland. He obtained his preliminary schooling at Marquette, Mich., and was awarded a degree in electrical engineering by Tri-State college, Angela, Indiana, in 1929. He immediately entered the Allis-Chalmers graduate engineers' training program and has been with the company since that time.

Mr. Schmitz now makes his headquarters at San Francisco, Cal. Prior to managing the Seattle office he was manager of the Allis-Chalmers office at Portland, Ore.

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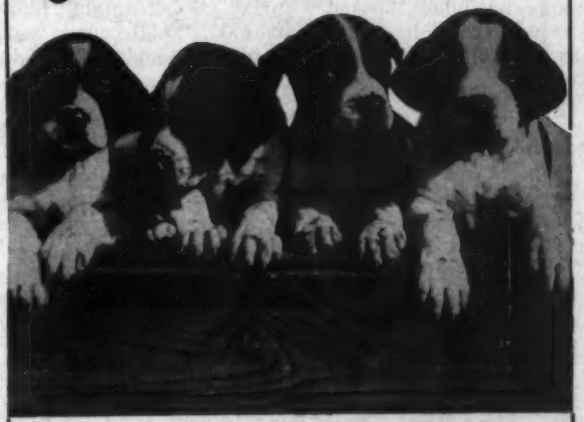

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, February 14, 1945.

BLANC FIXE—Prices on blanc fixe continue to conform to prevailing levels. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—All-over demand continues heavy. Production is high and civilian demand is reported in excess of stocks. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lot, f.ob. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand very heavy. Production large, but under demand. Market continues tight. Shipments delayed by traffic congestion. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Military and all essential requirements heavy with market reported tight at this date. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—The rosin market reports prices unchanged on some grades this week. "G" gum rosin is currently quoted at $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $5.75 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Demand fair during the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda ash is reported to absorb current production. Market is tight. Shipments delayed by traffic congestion. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market firm. Offerings in volume and supply situation is reported favorable. Demand continues heavy. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is satisfactory. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR—Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The current price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported good. Domestic grades are currently quoted at from $16 to $21 per ton at works.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Ll. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 30 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@	$13.[illegible]
No. 2 Glossy Coated	12.40 "	14.00
No. 3 Glossy Coated	11.60 "	13.[illegible]
No. 4 Glossy Coated	11.15 "	12.75
No. 1 Antique (watermarked)	10.25 "	11.75
No. 2 Offset	9.60 "	11.00
A Grade E. F.	9.35 "	10.75
A Grade S. & S. C.	9.60 "	11.00
B Grade E. F.	8.85 "	10.25
B Grade S. C.	9.10 "	10.50
C Grade E. F.	8.55 "	9.75
C Grade S. C.	8.80 "	10.00
D Grade E. F.	8.25 "	9.50
D Grade S. & S. C.	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	72.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

	New Rags (Prices to Mill f. o. b. N. Y.)	
Shirt Cuttings—		
New White, No. 1	6.50 @	7.25*
Silesias No. 1	— "	5.75*
New Unbleached	6.75 "	7.50*
Blue Overall	— "	5.50*
Fancy	— "	3.50*
Washables	— "	3.00*
Bleached Khaki Cuttings	— "	4.25*
Unbleached Khaki Cuttings	— "	3.50*

* OPA Maximum Prices.

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BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

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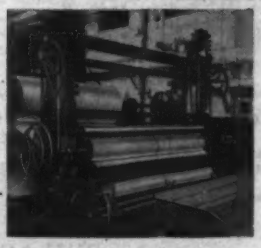

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POTDEVIN MACHINE CO.
EST. 1893
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POTDEVIN

Old Rags

White, No. 1—			
Repacked	*1.80	"	—
Miscellaneous	*1.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Seeding Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.35	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.22	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07½
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¾
Washable No. 1	.03
Blue Overall	.03½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03½
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.02
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	2.80	"	—
Miscellaneous No. 1	2.30	"	—
Miscellaneous No. 2	2.45	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.30	"	—
Black Stockings— (Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.03¼
Scrap—			
No. 1	1.25	"	1.30
No. 2	1.75	"	1.80
Wool Tares hea	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.35
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.75
South American	—	"	3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.35
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.75
South American	—	"	3.00
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Asst. Wool Pouches	—	"	3.90
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¾	"	.05
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06¼	"	.06½
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.03¾	"	.04
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¾	"	.03¾
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.06¼	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.80	@	—
Miscellaneous	2.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.35	"	—
No. 1 Roofing Bags	1.45	"	—

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Appleton Wires are Good wires
APPLETON WIRE WORKS INC

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HELP WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
SITUATIONS WANTED—5c a word, double rate for heavy face type. Minimum charge $1.25. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—5c a word. Double rate for heavy face type. Minimum charge $1.25.
WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
OPPORTUNITIES—5c a word. Double rate for heavy face type. Minimum charge $1.25.

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2—2000 lb. Holyoke Iron Tub Beaters.
1—1200 lb. Stout, Mills & Temple Iron Tub Beater.
1—500 lb. Gavit—iron tub beater.
2—400 lb. Gavit—iron tub beaters.

CALENDER STACKS

1—11-Roll 92" Face Calender Stack—complete with Drive.
1—36" 7-roll—Holyoke Machine.
1—77" 2-roll—Moore & White.
1—66" 5-roll—Black-Clawson.

CENTRAP

1—Shartle Brothers Centrap.

CYLINDER MOULDS

1—48" Diameter x 96" Face.
8—30" diameter x 72" face.
3—30" diameter x 74" face.
1—30" diameter x 71" face.
1—36" diameter x 90" face.

DRIVES

2—D. O. James 75 H.P. Speed Reducers with couplings and motor bases. Ratio 2.16 to 1. 900 RPM to 418 RPM.

DRYERS

18—Dryers — 36" Diameter x 94" Face — complete with 2-deck Frames, etc.
1—48" diameter x 94" face.
2—36" x 44" face—with frames and bearings.
1—24" diameter x 84" face. (Baby).
1—16" diameter x 84" face. (Baby).
3—36" diameter x 116" face.
2—28" diameter x 68" face.

EMBOSSER

1—28" two roll Embossing Calender.

ERKENSTATORS

3—I. W. E. Erkenstators—bronze construction—complete with motors, starters and distributing box.

FLATSCREEN

1—Packer type 14 plate flat screen — with Witham fastener and scraping device.

HYDRAULIC PRESSES

1—600 ton Dunning & Boschert hydraulic Pulp Baling Press—low and high pressure hydraulic pump, valves, piping, etc.—Platen 38" x 38"—ram 20" diameter—daylight 50"—stroke 36".

JORDANS

1—Pony Horne Jordan. Spare New Fillings.
1—Black-Clawson Jordan (belt driven).
1—#9 Emerson Jordan—for direct connection of a motor—requires use of 400 H.P. motor.
1—Smith & Winchester.

MOTORS

1—Allis Chalmers slip ring motor—200 H.P. —3 phase, 60 cycles, 440 volts—505 R.P.M.—with starting equipment.
1—100 H.P. General Electric Synchronous Motor—450 R.P.M.—Late type, including starting equipment.

PASTING MACHINE

1—45" Black-Clawson paster.

PIPE THREADER

1—Eaton, Cole & Burnham Company pipe threader—2" to 8"—complete with dies.

PULP EQUIPMENT

1—84" Carthage Chipper—complete and in excellent condition.
1—32" three pocket Glens Falls Grinder (for 27" wood).
3—Rotary incinerators—9' diameter x 20' long.

PULPERS

1—#2 Lannoye Pulper.
2—Jones Pulpers—direct connected to 60 H.P. motors—3 phase, 60 cycle, 440 volts —forward and reverse starting.

PUMPS

Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REEL

1—2 Bowl Reel — 112" face — bowl 20" diameter.

ROLLS

500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

ROTARY SCREEN PLATES (Bird)

29—Cut .035.
3—Cut .065.

RUBBER COUCH ROLLS

1—72½" Face x 9" diameter (soft rubber).
1—84½" face x 16" diameter (soft rubber).

SAVEALLS

2—#5 Bird Savealls.
1—North Save-all—cylinder mould 72" diameter x 100" face—used less than one year.

SHREDDERS

1—Jeffrey swing hammer type shredder—size 24" x 18"—antifriction bearing equipped.
1—#25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder—used one year.
1—Taylor Stiles #5 Pulp Shredder.

SHEETER

1—103" Hamblet Single Knife Sheeter — complete with Slitting Device.
1—110" Horne single knife rotary sheet cutter.

SLITTERS

1—114" Two drum Langston Slitter and Winder.
1—110" Beloit slitter (slitter attachment only)
1—114" Two drum Kidder slitter and winder.
1—60" Kidder slitter and winder.

SUCTION BOXES

1—Nash 100" face Suction Box.
1—Nash 125" face Suction Box.
3—Brass Suction Boxes—90" drilled face.
2—Brass Suction Boxes—77⅞" drilled face.

SUCTION COUCH ROLL

1—Sandusky Suction Couch Roll — 18" diameter x 130" face — Complete with Sturtevant Vacuum Pump and drive mechanism.

SUCTION PRESS ROLLS

1—Sandusky suction press roll, Bronze — 14⅞" diameter x 77" drilled face.
1—Sandusky Suction Press Roll—14⅞" diameter x 68" drilled face.

SUCTION PRESS SHELL (only) BRONZE

1—18" diameter x 94" drilled face.

J. J. ROSS CO., 250 Frelinghuysen Avenue, Newark 5, New Jersey
TEL. BIGELOW 3-3720

HELP WANTED

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston, Mass.
Specializing in Paper Mill Personnel

Managers, one for mill and one for converting plant, both on light weight papers.
Paper mill and machine draftsmen and designers
Purchasing agent
Traffic Manager
Chief Engineer
Mechanical Engineer
Tour boss (two); one for Fourdriniers and one for cylinders
Chemists (several)
Boss pipe fitter
Comptroller-accountants
Master mechanic
Tour boss news print mill in Canada
Assistant to plant engineer
Time study and industrial engineers
Beater engineers
And many others

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. F-15

SEYBOLD PAPER STOCK DIVISION
CINCINNATI

Wants Manager for their new up-to-date Waste Paper Sorting Plant. Contact HARVEY SEYBOLD, 8th & Lock Sts., Cincinnati, Ohio. F-15

DESIGNING engineers, draftsmen, resident engineer, general industrial pulp and paper experience, desired by well established firm of consulting engineers. Address Box 45-51 care Paper Trade Journal. F-15

HELP WANTED

WANTED

Partner with paper making experience for mill now in successful operation. Address Box 45-62, Paper Trade Journal. F-22

WANTED—MASTER MECHANIC

Paper mill in Northern New York State, manufacturing toilet and facial tissue, has position open as Master Mechanic. Experience on Yankee Fourdrinier Machines and roll toilet paper converting equipment necessary. Should have knowledge of engineering. Excellent future for a good man. Please furnish complete job qualifications. Address Box 45-60 care Paper Trade Journal. F-15

"The Research Department of a large fibre container manufacturer has an opening for a chemist or chemical engineer, preferably with paper or paperboard mill experience. Work includes assistance in the development, manufacture, and quality control of paper packages. Midwest location. State education, experience, references, draft status, and salary expectations. Address Box 45-63, care Paper Trade Journal." F-23

SALESMAN WANTED — with contacts with Paper Bag Manufacturers. Address Box 45-101 care Paper Trade Journal. F-15

HELP WANTED

SALARIED POSITIONS — This advertising service of 35 years' recognized standing negotiates for high salaried supervisory, technical and executive positions. Procedure will be individualized to your personal requirements and will not conflict with Manpower Commission. Retaining fee protected by refund provision. Identity covered and present position protected. Send for details. R. W. BIXBY, INC., 117 Delward Bldg., Buffalo, 2, N. Y. tf

ENGINEERING DRAFTSMAN for Post War Design and Development Paper Mill Machinery. Experience in Paper Mill Equipment Design Helpful. Location Northern New Jersey. State experience. Certificate availability necessary. Write Box 44-527, Paper Trade Journal, 15 West 47th St., New York, 19. N. Y. TF

WANTED—Machine Tender. High speed fourdrinier machine manufacturing Kraft paper. Prefer man with high school or better education—25 or 35 years of age. Any applicants regarding this position must comply with WMC regulations. Address Box 45-36 care Paper Trade Journal. TF

MASTER MECHANIC—Excellent opportunity for qualified man to take charge of maintenance in large folding paper box plant. Address Box 45-66 care Paper Trade Journal. F-15

PURCHASING AGENT—Age 30 to 40. Volume purchasing experience necessary. Post war opportunity. Give complete resume and salary desired. Address Box 45-79 care Paper Trade Journal. F-22

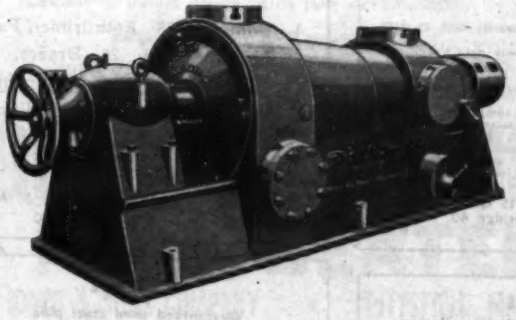
PAPER BAG MANUFACTURER—GENERAL HELP. Modern plant in Philadelphia. New equipment. Ideal working conditions. Address Box 45-73 care Paper Trade Journal. F-15

FIBERS OF THE FUTURE

Never send a boy to do a man's job. Never set a jordan to cut and masticate stock when it's *gentle* treatment you're after. Set it to brush and hydrate. Better yet, install a Dilts Hydrafiner and do a real hydrating job.

Dilts Hydrafiners are built especially for hydrating-brushing. These machines stand alone in their field —by today's reckoning, professionals among amateurs when it comes to stock hydration.

Full particulars and many installations to which to refer you for performance check.



Dilts Machine Works, Fulton, N.Y.
Shartle Bros., Middletown, Ohio
Divisions of
Black-Clawson Co., Hamilton, Ohio

HYDRAFINERS

SHARTLE Dilts

HELP WANTED

SUPERINTENDENT—Experienced, Self Opening, Squares, Flats, Sacks, Specialties. To take full charge of Bag Plant. Give full data. Address Box 45-76 care Paper Trade Journal. F-15

PAPER BAG MACHINE ADJUSTERS—Modern plant in Philadelphia. All new equipment. Ideal working conditions. Give full details of experience in first letter. Address Box 45-72 care Paper Trade Journal. F-15

WANTED—Master Mechanic and Millwright with paper mill experience. Address Box 45-97 care Paper Trade Journal. F-22

WANTED—Machine Tenders, Back Tenders and Third Hands for cylinder machine. Address Box 45-98 care Paper Trade Journal. F-22

ENGINEER—Excellent opportunity in essential industry for a young man with research ability. Ch. E. or M. E. preferred. Permanent responsible position with reliable progressive textile firm. State age, training, experience. Include photo. Address Box 45-96 care Paper Trade Journal. M-8

WANTED—Shift Manager for high grade board mill in England. Immediate opening for capable man with board mill or equivalent paper mill experience. Salary up to £1000 according to qualifications. Address Box 45-93 care Paper Trade Journal. F-15

MAN EXPERIENCED on Waxing Machine in paper converting plant in New York City. Write salary and experience. Address Box 45-86 care Paper Trade Journal. F-15

SITUATIONS WANTED

PRODUCTION MAN—Thoroughly experienced in production and supervision all varieties fine cardboards. Successful record personnel relations. Address Box 45-4 care Paper Trade Journal. F-22

PRACTICAL SUPERINTENDENT on high grade folding boards, sulphite and groundwood specialties, test liner, etc. Address Box 45-59 care Paper Trade Journal. F-15

POSITION WANTED—Tour Boss or Night Superintendent. Well up on folding grades. Can report at once. Address Box 45-80 care Paper Trade Journal. F-15

KRAFT PULP MILL SUPERINTENDENT and Kraft Paper Mill Superintendent desires positions in modern kraft mill. Both men thoroughly experienced in the manufactory of Kraft Pulp and Kraft Paper. Have worked successfully together for the past four years. Both men in their late thirties. All replies held strictly confidential. Address Box 45-78 care Paper Trade Journal. F-22

TOUR FOREMAN desires change. Experience on Cylinders or Fourdrinier Machines. Will consider job as machine tender. Experience on most all grades of paper and box board. Can handle help and get production. Will give good references. Address Box 45-74 care Paper Trade Journal. F-15

ASSISTANT MANAGER of Large Paper Firm Desires Change. Good Background, Executive Ability. Address Box 45-83 care Paper Trade Journal. F-22

PAPER MILL SUPERINTENDENT seeks change. Experienced on Tissues, Kraft Bag, Kraft and Sulphite Waxing, Bonds, all creping grades. Address Box 45-99 care Paper Trade Journal. M-8

SALESMAN—Experienced all grades of paper and allied lines, desires connection with paper manufacturer doing business with jobbers and wholesalers east of Mississippi. Have handled this class of trade for a number of years. Address Box 45-95 care Paper Trade Journal. F-15

WANTED—Position as either Master Mechanic, Superintendent or Manager. Have had thirty years experience. Fifteen years as Master Mechanic, ten years as Superintendent and five years Manager. Can organize personnel and get results. Experience on Kraft, board, book, tissue roofing felts. Address Box 45-89 care Paper Trade Journal. M-1

FOR SALE

FOR SALE

FOR SALE

by JACK ROSS 17 Porter Avenue, Newark 8, N. J.

Waverly 3-5675

2—120" Hamblet Duplex Sheeters with slitting device and Hamblet Layboys. Will stack four piles. With two deck 12 roll backstands.
These machines are in excellent condition and are guaranteed for 60 days. Prints on request.
1—Pusey & Jones 6" x 8" open impeller Centrifugal Stock Pump. Belt driven.
2—Pusey & Jones 5¼ x 8" open impeller Centrifugal Stock Pumps. Belt driven.
4—14" x 20" Connersville Vacuum Pumps.
3—12" x 18" Connersville Vacuum Pumps.
These pumps are fully rebuilt.
5—New Fourdriniers, wires 75 mesh, 75" wide by 50 foot long. Now in original boxes.
1—Downingtown 2500 lb. iron tub cyclone beater. Beater roll 60" face, 72" diameter. This beater in excellent condition having been in operation less than two years. Prints on request.

F-15

SITUATIONS WANTED

EXPORT MANAGER—Broad experience, excellent connections here and abroad. Able to develop existing business or to build up new department from scratch. Immediate availability. Address Box 45-88 care Paper Trade Journal. F-22

FOR SALE

PAPER MILL EQUIPMENT FOR SALE

65" Hamblet Sheeter with 4 slitters—with or without 6-roll backstand.
110" Hamblet Sheeter with 3 slitters and 4-roll backstand.
45" White Automatic Power Cutter.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
63" Oswego Mill Type Cutter.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18, N. Y. TF

FOR SALE

1—Emerson Jordan 15 ton capacity with 75 HP motor
1—Arbor hydraulic press, in very good condition, with pump
1—Horne patent beater, 4" tub, bronze bars, 54" wide, excellent condition
1—Niagara Beater
2—10 x 10 Beloit triplex stuff pumps
2—8-plate and 2 10-plate flat screens
1—No. 2 Lannoye pulper
2—Moore & White rotary screens
1—Mammoth Junior Jordan with new filling
2—2000 lb. Midwest Fulton high speed iron tub beaters, rolls 61 x 60".

FRANK H. DAVIS CO.
175 Richdale Ave., Cambridge 40, Mass. M-1

FOR SALE

Spiral Wound Paper Tube Making Machine—M. D. Knowlton make. Will make tubes from 1" to 8" I.D.—Machine is complete with cutoff, glue boxes, and motors.
Also—a Langston Tube Recutting Machine.

DIAMOND STRAW & MACHINE CO.
114 E. 16th St. N. Y. C. F-15

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore, 30, Md. TF

FOR SALE

FOR SALE

Running Board and Specialty Mill.—20 ton capacity—located in East. Address Box 45-61 care Paper Trade Journal. F-22

FOR SALE

1—Complete 98" Fourdrinier Paper Machine with 26 Dryers, 48" diameter x 96" face, including auxiliary equipment. Additional details on request.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Telephone Bigelow 3-3720 F-15

FOR SALE

Guaranteed used steel pipe and boiler tubes
Wood and steel tanks
Buildings, valves and fittings

JOS. GREENSPON'S SON PIPE CORP.
Natl. Stock Yards, St. Clair Co., Ill. M-8

FOR SALE—Meisel spot sheeter and layboy 48", American Decalcomania Co., 4334 West Fifth Avenue, Chicago, 24, Ill. M-8

FOR SALE—65" Clark Sheeter with Erie layboy and 16-roll back-stand. Address Box 45-84 care Paper Trade Journal. F-15

FOR SALE

FOR SALE—Unused clothing suitable for 48" and 76" Fourdrinier Paper Machines, includes wires, felts, aprons and jackets. Address Box 45-71 care Paper Trade Journal. F-15

WE OFFER to Paper Bag Manufacturers limited quantity of paper suitable for grocery bags. Address Box 45-100 care Paper Trade Journal. F-15

FOR SALE—Sixty Dryers consisting principally of 86" and 90" face, a few 84" and 85" face, complete with triple deck stands, gears, bearings and piping. EMPIRE BOX CORPORATION, GARFIELD, NEW JERSEY. M-29

FOR SALE—CLAFIN REFINER, belt driven 30" dia. grinding plates. Write for further details. Address Box 45-94 care Paper Trade Journal. M-8

FOR SALE—One Hudson Sharp hard wound toilet tissue rewinder — 3 bars — cuts sheets 4½ x 5" - 4½ x 4½ - 11 x 15 - 11 x 13½ - 11 x 7½ without motor. Address Box 45-91 care Paper Trade Journal. M-8

FOR SALE—#12 Kidder 12" x 28½" Double Head Roll Feed Bed and Platen Cloth Bag Stock Printing Press. Prints one or two colors full size of form. For further particulars address Box 45-87 care Paper Trade Journal. F-15

FOR SALE—38" Oswego Automatic Clamp Cutter, fully rebuilt and guaranteed. Address Box 45-102 care Paper Trade Journal. F-15

WANTED

WANTED

One (1) Laboratory Beater
Waterbury Hydraulic Drive size 3
11—60" Diameter x 92" Face Dryers
10—48" Diameter x 92" Face Dryers
4—36" Diameter x 92" Face Dryers

with gears, frames, felt rolls and cone pulley drives. Address Box 44-708 care Paper Trade Journal. TF

WANTED TO BUY — One Yankee Dryer, approximately 84" in width, from 84 to 120" in diameter. Address Box 45-64 care Paper Trade Journal. F-22

WANTED

WANTED

One Beater of 1,000 lb. capacity.

One Jordan—No. 1 or No. 2 Miami or equivalent.

Two Calender Stacks — Approximately 100 inch face.

Give complete description, specifications and price.

Empire Box Corporation
Garfield, New Jersey
TF

WANTED

CALENDER STOCK—10" INTERMEDIATE ROLL MINIMUM
ALSO
SHEETER—SINGLE OR DOUBLE CUT-OFF
BOTH FOR 72" MACHINE

Address Box 44-728 care Paper Trade Journal. TF

WANTED—Urgent! 84" Wet Machine of any standard make. Address Box 45-92 care Paper Trade Journal. F-15

WANTED—Tachascope or similar device for measuring length of moving felt. Must have clutch. Address Box 45-90 care Paper Trade Journal. M-1

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

WANTED

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS: GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 44-835 care Paper Trade Journal. tf

WANTED—Any Item of Paper Tube and Paper Can Machinery, Slitters, Tube Winders, Cutters, etc. etc. We will buy such machinery in any condition. Theo. Adams, 111 W. Washington St., Chicago, 2, Ill. TF

WANTED to Purchase Outright—ANILINE PRESS DESIGN—Drawings, etc. Require type of press to be used in conjunction or in tandem with grocery or specialty bag machines. Submit photographs, general specifications, and advise approximate price and terms. Address Box 45-77 care Paper Trade Journal. F-15

The right man may be seeking a job in an advertisement in this section.

The machine or the material you urgently need may be advertised right here in these columns.

Read Them, Use Them—If you need something, advertise for it—if you have something to sell tell the industry about it—Everybody reads the Clearing House.

ALWAYS IN THE MARKET
for all Types of Paper Mill Felt.
Consult us before disposing of your Accumulation.
Louis Tucker & Company
"Mfgs. All-Wool Blankets"
2938-42 N. Halsted St. Chicago 14, Illinois

WEIGHING while conveying with the WEIGHTOMETER
Wood Chips, Salt Cake, Sulphur, Coal, Etc.
MERRICK SCALE MFG. CO.
PASSAIC NEW JERSEY

JONES-BERTRAMS
★ **PATENT BEATER**
E. D. JONES & SONS COMPANY • PITTSFIELD, MASS.

K-121-B — DEINKING — DECOLORIZING — K-C-2
and
COOKING PROCESSES
THE KINSLEY CHEMICAL COMPANY
12500 Berea Road — Cleveland, Ohio

MISCO "C"
THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

Appleton Felts
MAKE GOOD PAPER
APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

WHERE TO BUY

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The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Monsanto Chemical Co.
Norton Co.

ADHESIVES
Ambel Mfg. Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
H. K. Porter Company Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

BAG MACHINES
Thomas W. Hall Co., Inc.
Pendevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BEARINGS
Black-Clawson Company
Jones, E. D. & Sons Co.
The Manhattan Rubber Mfg. Co.
Montague Machine Works
Railway Bearing Co.
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
SKF Industries Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Herman Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machinery Corp.

BLEACHING APPARATUS
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company
Valley Iron Works Co.

BOTTOMS
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Fort Pitt Steel Casting Co., Div. H. K. Porter Company, Inc.
The Frederick Iron & Steel Co.
Grinnel Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Smith & Winchester Mfg. Co.
Traylor Engineering & Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross J. O. Eng. Co.
Shartle Brothers Machine Co.

CHEMICALS
Aktivin Corporation
Amer. Cyanamid & Chem. Corp.
Ansul Chemical Co.
Calco Chemical Co.
Diamond Alkali Co.
Dispersion Process Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesmann & Co.
Hooker Electrochemical Company
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
The Neville Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Stauffer Chemical Company
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Pendevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
W. R. Cliffe
Ferguson, Hardy S.
Hardy, George P.
Johnson & Wirt, Inc.
The Kohler System Company
L. I. M. E.
Merritt-Chapman & Scott Corp.
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Seneca Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plohn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Mfg. Co.
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.

DIGESTERS
The Bigge Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric & Manufacturing Company

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric & Manufacturing Company

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Lamb & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Astex-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Fitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Headrick Mfg. Co.
Klemp, W. F., Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Robinson, C. P.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
M. F. Bowsher
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.
Westinghouse Electric & Manufacturing Company
Wilkens-Anderson Co.

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
Tide Water Associated Oil Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Monarque Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plaha Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric & Manufacturing Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Postdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
The Norwood Engineering Company
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
Klemp, W. F., Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
The Richardson Economy Plug Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Postdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer C.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteseman & Co., Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Behr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric & Manufacturing Company

RESINS
American Cyanamid & Chemical Corp.
The Neville Company
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Postdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Postdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
American Cyanamid & Chemical Co.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Postdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Sticht Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric & Manufacturing Company.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt

J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Noble & Wood Machine Co.
Rodney Hunt Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric & Manufacturing Company
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
The Foxboro Company
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric & Manufacturing Company

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
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Black-Clawson Company
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Reliance Elec. & Engrg. Co. —
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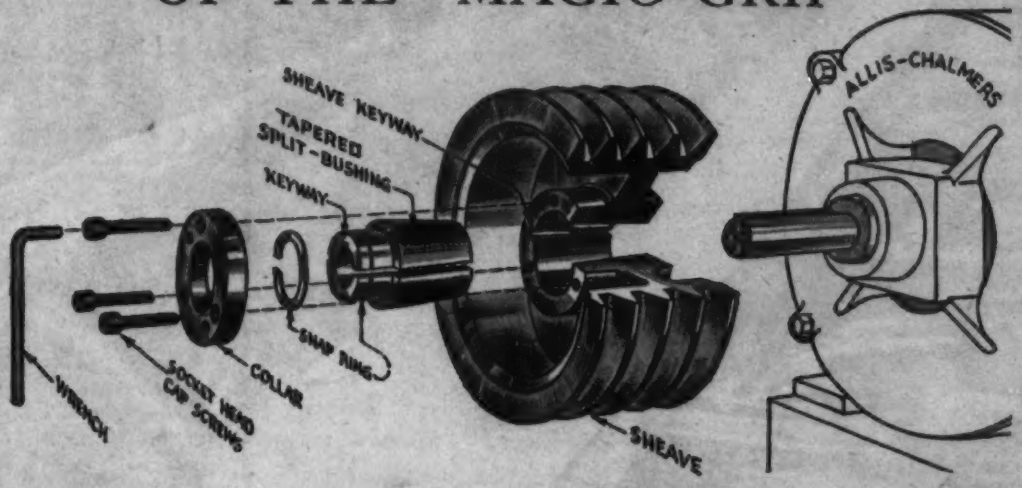

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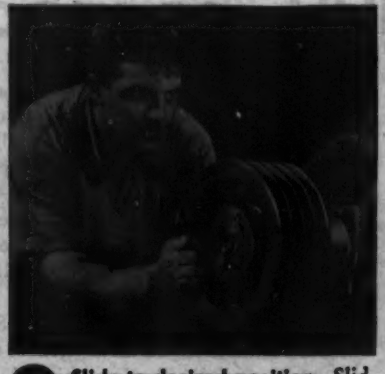

2 Slide to desired position. Sliding easily, sheave can be placed *exactly* according to straight-edge ... giving you true alignment with resulting smooth performance. A minimum of time is required.

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PAPER TRADE JOURNAL

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Protective
Structural
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Converting of Paper

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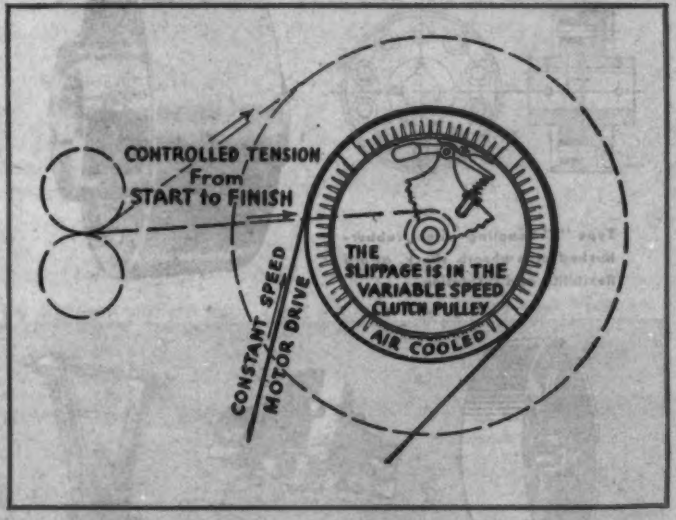

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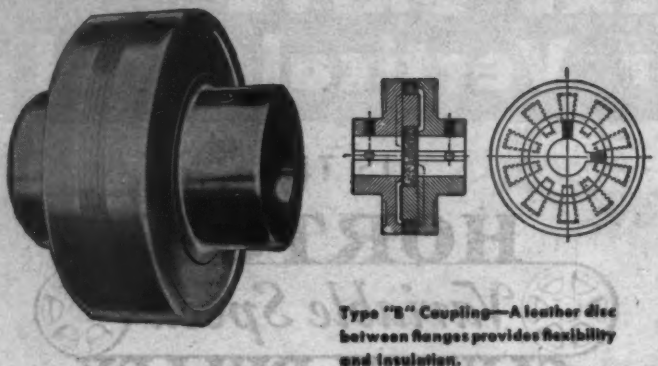

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HIGH LIGHTS:

The earliest paper mill in New Hampshire is believed to have been established at Keene in 1792, but no authentic information regarding it is available.

New Hampshire pioneered in the manufacture of high grade sulphite pulp, and is still a leader in quality, although it has not ranked high on a quantity basis. In the production of paper it ranks 19th, making a variety of papers ranging from tissues to boards. It also contains one of the leading converting plants making gummed and coated papers.

New Hampshire has 30 paper mills and 6 pulp mills; 28 Fourdriniers, 13 cylinder machines and 60 wet machines.

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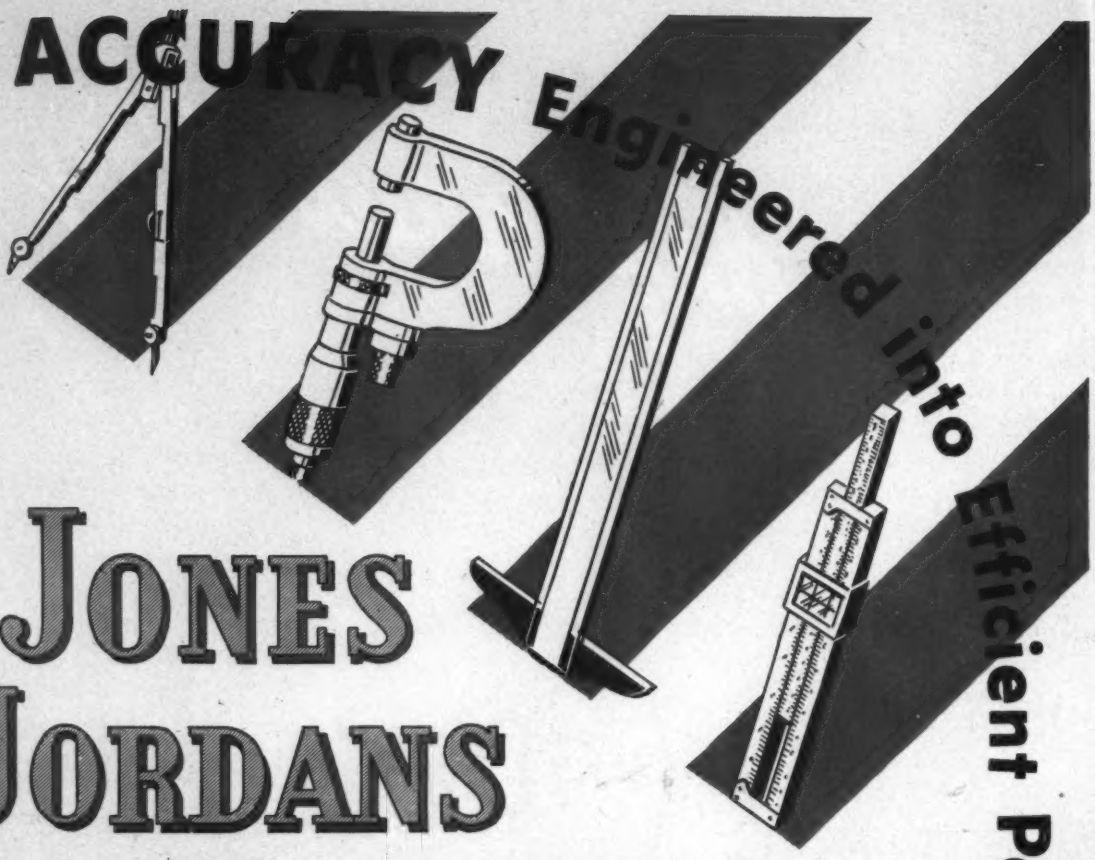

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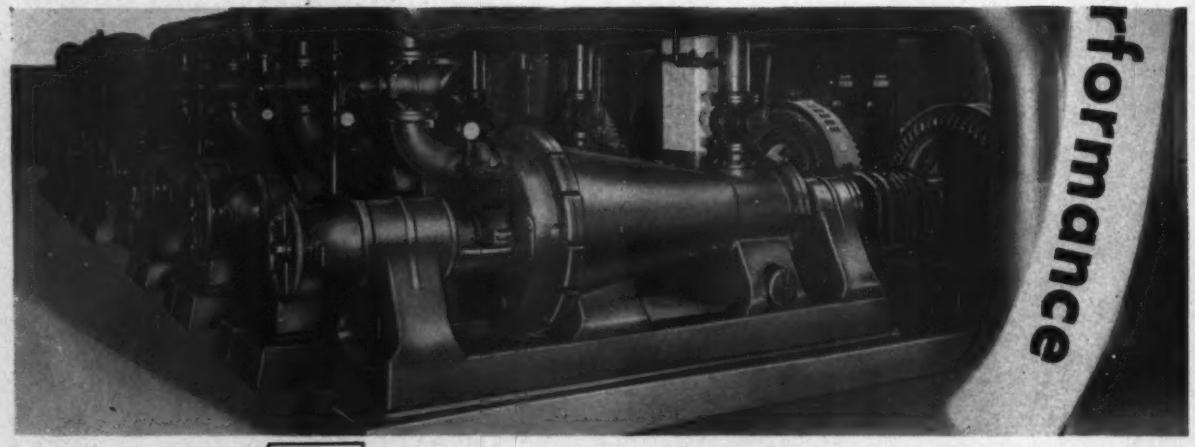

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Actual photo of a Gulf Service Engineer (left) consulting with Superintendent on paper machine lubrication.

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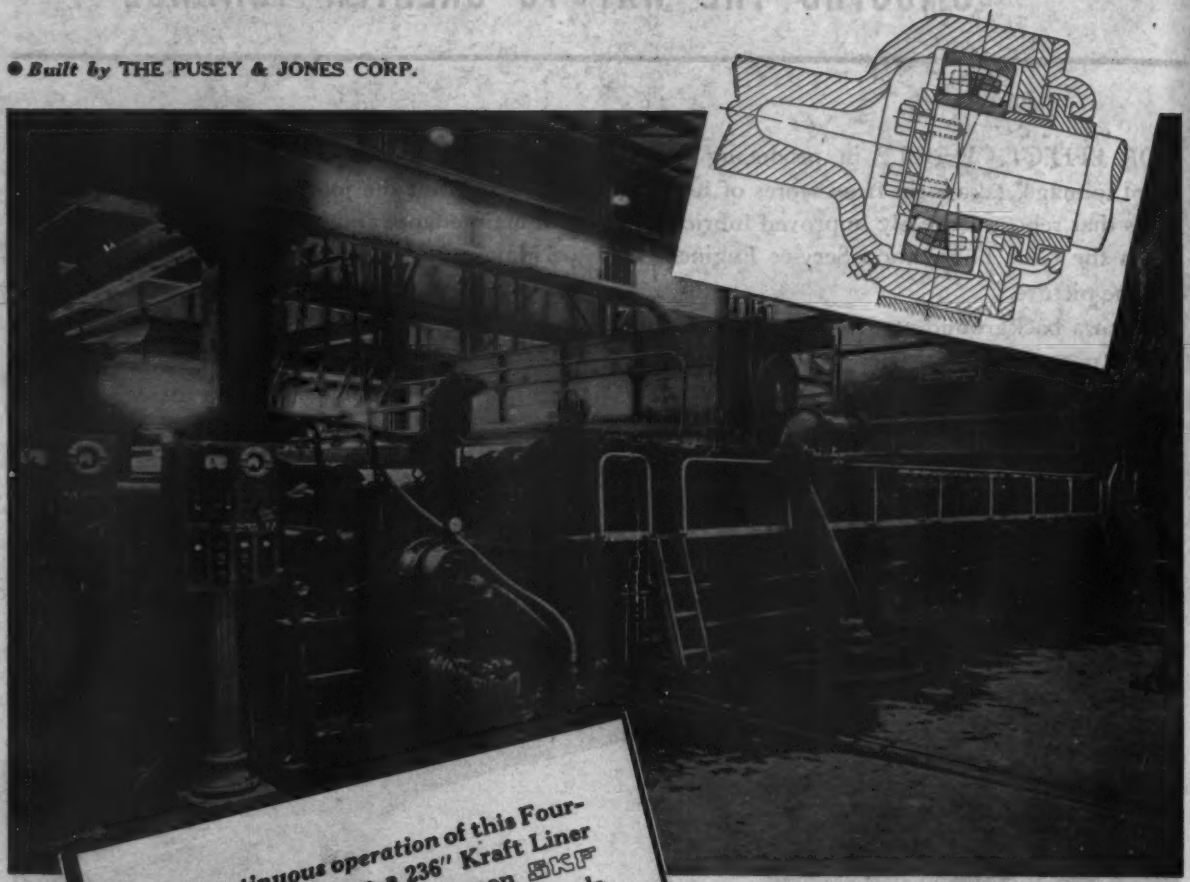

The *continuous operation* of this Four-drinier Wet End on a 236" Kraft Liner Board Machine depends upon SKF Bearings for several things. It depends upon SKF's for years of smooth, steady performance of return wire and suction couch rolls. It depends upon SKF's to reduce maintenance to infrequent lubrication. All these advantages and many others are reflected not only in *continuity*, but in long wire life . . . low cost of maintenance and production.

5740

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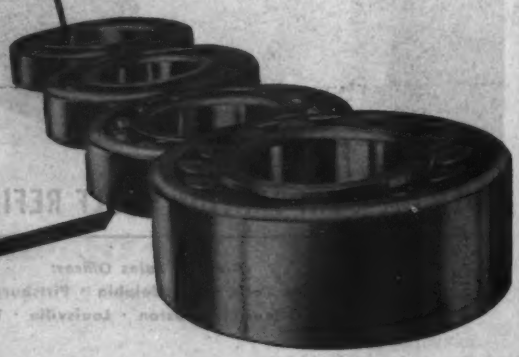
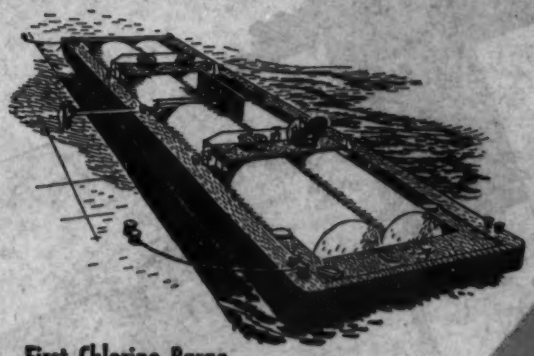


Columbia Spotlight



First Chlorine Barge

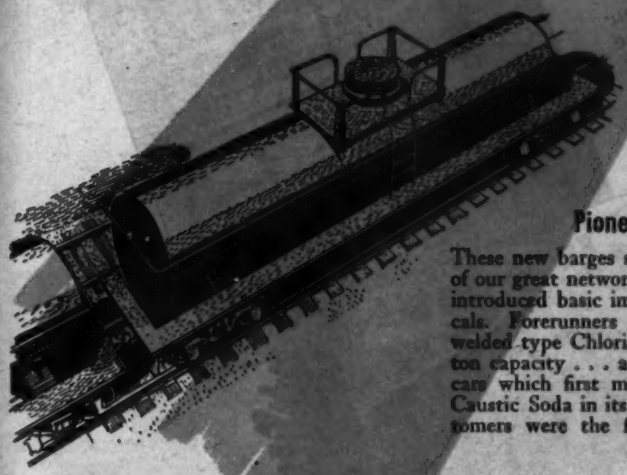
Newest development in the transportation of Liquid Chlorine is this barge, especially designed by Columbia to facilitate shipments via inland waterways. All river shipments of this chemical were previously limited to one-ton containers—a slow, tedious and costly method by comparison.

Cradling four fusion welded steel tanks in its 135-foot steel hull, the new barge has a capacity of 380 tons of Liquid Chlorine. It may be loaded or unloaded from either side; connections are so designed as to prevent manifolding of the tanks.

First Caustic Soda Barge

Another 135-foot barge has just been placed in service by Columbia. This one, the first designed specifically for Caustic Soda, will carry approximately 500 tons of Caustic Liquor. Its huge, welded tank is supported by suitable framework in a heavy steel hull.

Foamglas insulation guards the Caustic from freezing and a caustic resistant lining prevents metallic contamination of the chemical in transit.



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These new barges show the way to the more advantageous use of our great network of inland waterways. Similarly, Columbia introduced basic improvements in rail transportation of chemicals. Forerunners of these barges were Columbia's fusion welded-type Chlorine tank cars . . . then Chlorine cars of 55 ton capacity . . . and the insulated and specially lined welded cars which first made possible the shipment of 73% Liquid Caustic Soda in its purest form. In every case, Columbia customers were the first to profit by these innovations.

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Modified Sodas · Caustic Ash · Pittsflake · Calcene T (Precipitated Calcium Carbonate) · Calcium Hypochlorite

KALAMAZOO GLAZED TILE TANKS FOR POST-WAR PLANS

Equipment is being worn out rapidly during our all-out war production program. When the war stops, much of it must be replaced with a minimum of delay.

When you are replacing your stock handling equipment, buy the best. KALAMAZOO GLAZED TILE CHESTS AND TANKS will fit into your program. KALAMAZOO engineers will help you now in making future plans.

Do not forget that, in many cases, KALAMAZOO tanks and chests are available now.

Write us for complete information whether for immediate or post war use.

KALAMAZOO TANK & SILO CO.

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CALL ON CRANE . . .
Headquarters for ALL Piping Materials

ONE SOURCE OF SUPPLY
ONE RESPONSIBILITY FOR ALL PARTS
ONE STANDARD OF QUALITY

Look at the advantages you get when you depend on Crane for all your piping material needs. You choose from the world's greatest line—in brass, iron and steel. One source—your Crane Branch or Wholesaler—supplies all your requirements for any job. Undivided responsibility protects the quality and craftsmanship of every part. Thus, while speeding deferred replacements and keeping piping at peak efficiency, you are benefiting by Crane Co.'s 90-year experience in the field of piping equipment.

Pump discharge piping in industrial plant.

SERVICE RECOMMENDATIONS: **Crane 250-lb. Iron Body Wedge Gate Valves are recommended for services too severe for Standard valves but where the use of steel valves is not justified. Available in all-iron or brass-trimmed; in O. S. & Y. or Non-Rising Stem patterns. With screwed ends up to 4 in.; flanged ends up to 12 in. See your Crane Catalog for complete specifications.**

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. · *Branches and Wholesalers Serving All Industrial Areas*

CRANE

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

WEST COAST HEMLOCK PULP

A TOWER SKIDDER at the track supports one end of the "skyline" along which incoming logs are hoisted and placed within reach of the loading boom.

PULP DIVISION ‡ WEYERHAEUSER TIMBER COMPANY

Heavy tonnage job . . .

Ever since the days when car records were press-transferred on yellow tissue, railroad canary has been the popular choice of railroad men because of its visibility and utility.

Auramine 00 has consistently been used in the production of these volume papers. Valued because of its non-rubbing property, its economy, and because it can be used for both beater coloring and calendar staining, Auramine 00 has few competitors.

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Look at the Record!

SERVICE RECORD—As of September 1, 1944

DE LAVAL PUMPS at ————

No.	Discharge Pressure psig	Suction Temp. °F.	Placed in Service	Total Service Hours	Outages Due to Pump	Cause of Outages	Approx. % Increase in Pump Power
14	1186	260°	12- 2-38	40,383	2	Replace ball locating bearing and shaft sleeves	Negligible
					1	Replace shaft sleeves	Negligible
		260°	10-11-40	28,839	0	.....	Negligible
15	1186	350°	8- 4-39	10,818	0	.....	5%
21	1186	260°	1- 2-42	21,475			
16	1186						

Capacity (all units).....1455 g.p.m.

of DE LAVAL HIGH-PRESSURE BOILER-FEED PUMP PERFORMANCE

Not one major trouble after as much as 40,000 hours of service!

The first of these units was installed in February, 1938; the most recent in February, 1942. All have demonstrated the satisfactory performance of De Laval boiler-feed pumps for high-pressure central station service.

Other important installations, operating at pressures up to 1600 psi and handling high temperature feed water, are operating with equal freedom from trouble, due in no small measure to the excellent performance of the De Laval automatic balancing device, the De Laval large clearance labyrinth wearing rings, and the sturdiness of De Laval solid end head construction.

3629

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS and COMPRESSORS • IMO OIL PUMPS

DE LAVAL

STEAM TURBINE COMPANY · TRENTON 2, NEW JERSEY

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Maximum Thickener Efficiency In Minimum Tray Area

Superimposed tray compartments of the Dorr Balanced Tray Thickener make it the only type of Thickener providing 100 per cent tray efficiency and therefore maximum utilization of floor area.

Compartments are arranged in parallel, each with separate feed and overflow but having a single sludge discharge in common. Due to "Balanced Tray" construction and positive sludge seal, each compartment functions as an individual Thickener.

Compartments may vary in number from two to six, depending on diameter of the unit. *Continuous* thickening is thus effected in less space than in batch thickening or in types of Tray Thickeners the designs of which do not permit 100 per cent utilization of the area of each tray.

Maximum density of underflow completes the overall economy of the Dorr Balanced Tray Thickener.

There are Dorr Balanced Tray Thickeners as small as six foot diameter and as large as 90 foot diameter, handling either a few tons daily or several hundred tons daily—evidence that the Balanced Tray principle (exclusive with Dorr) is adaptable to the needs of both small and large processors.

FEATURES

- Maximum Utilization of Floor Area.
- 100 per cent Tray Efficiency.
- Each compartment operates as a separate Thickener.
- Maximum Underflow Density.
- The Design lends itself to construction of any of the following materials: Standard Steel • Corrosion Resisting Metals • Rubber Covered • Wood Trays • Insulated Tanks.

Write for Bulletin No. 3001, "Thickening and Clarification"—or call in a Dorr Engineer and let him help you with your thickening problems.

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PENN SALT Corrosion-Resistant CEMENTS

These times call for *action!* When you build corrosion-resistant equipment, get it into service *fast* with Penchlor* Acid-Proof Cement.

Penchlor Cement is a sodium silicate type cement—quick-setting and self-hardening. No long waits for drying. No acid treatment necessary to harden . . . Penchlor Cement is easy to handle—simplifies construction, speeds repair, saves labor. This cement has *proved* its durability by years of excellent performance in the toughest kind of acid-resistant service.

• Where conditions require a cement of unusual strength and high resistance to abrasion, consider the other Pennsalt Corrosion-Resistant Cements: *Asplit, for conditions always acid . . . *Causplit**, for alternate acid and alkaline conditions. These are easy to handle and will withstand a wide range of corrosive conditions up to 350 degrees F.**

• At your service, without obligation, is the long experience of our engineers in handling acids and alkalis in our own plants. Write fully or if you prefer, use the coupon.

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I would like to have a free copy of your booklet No. 6 on Penchlor Acid-Proof Cement.

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WALWORTH No. 95
BRONZE GLOBE VALVE
Where throttling is not required
Improved lock-on, slip-off disc holder. Re-new disc. Union bonnet for extra strength.
Non-heating hand-wheel. High quality bronze body casting. Screwed or flanged ends.

WALWORTH No. 245 P
BRONZE GLOBE VALVE
Where throttling is required
Removable seat and disc. Hard copper-nickel discs. Stainless steel seat rings.
Non-heating hand-wheel. High quality bronze body casting. Screwed or flanged ends.

Both of these popular Walworth Bronze valves are recommended for general service — No. 95 where throttling is not required, No. 245P where frequent throttling is required. No. 95 is rated at 150 pounds steam pressure. Its improved renewable disc and lock-on, slip-off disc holder — originally developed by Walworth — saves time and trouble. No. 245P, rated at 200 pounds steam pressure, features extra hard discs and seat rings that are highly resistant to abrasion, erosion, wire-drawing, and galling. These Walworth quality valves Nos. 95 and 245P are made of the high-grade bronze known as Navy Composition M.

These valves are famous for their economy and long, reliable service. In design and construction they reflect the unusual sturdiness and efficiency of all Walworth Valves, the result of "know-how" gained by more than a century of valve manufacturing experience.

For further information on Walworth's complete line of valves and fittings get in touch with your Walworth distributor, or write for a free copy of Catalog 42.

11 AWARDS TO 4 PLANTS

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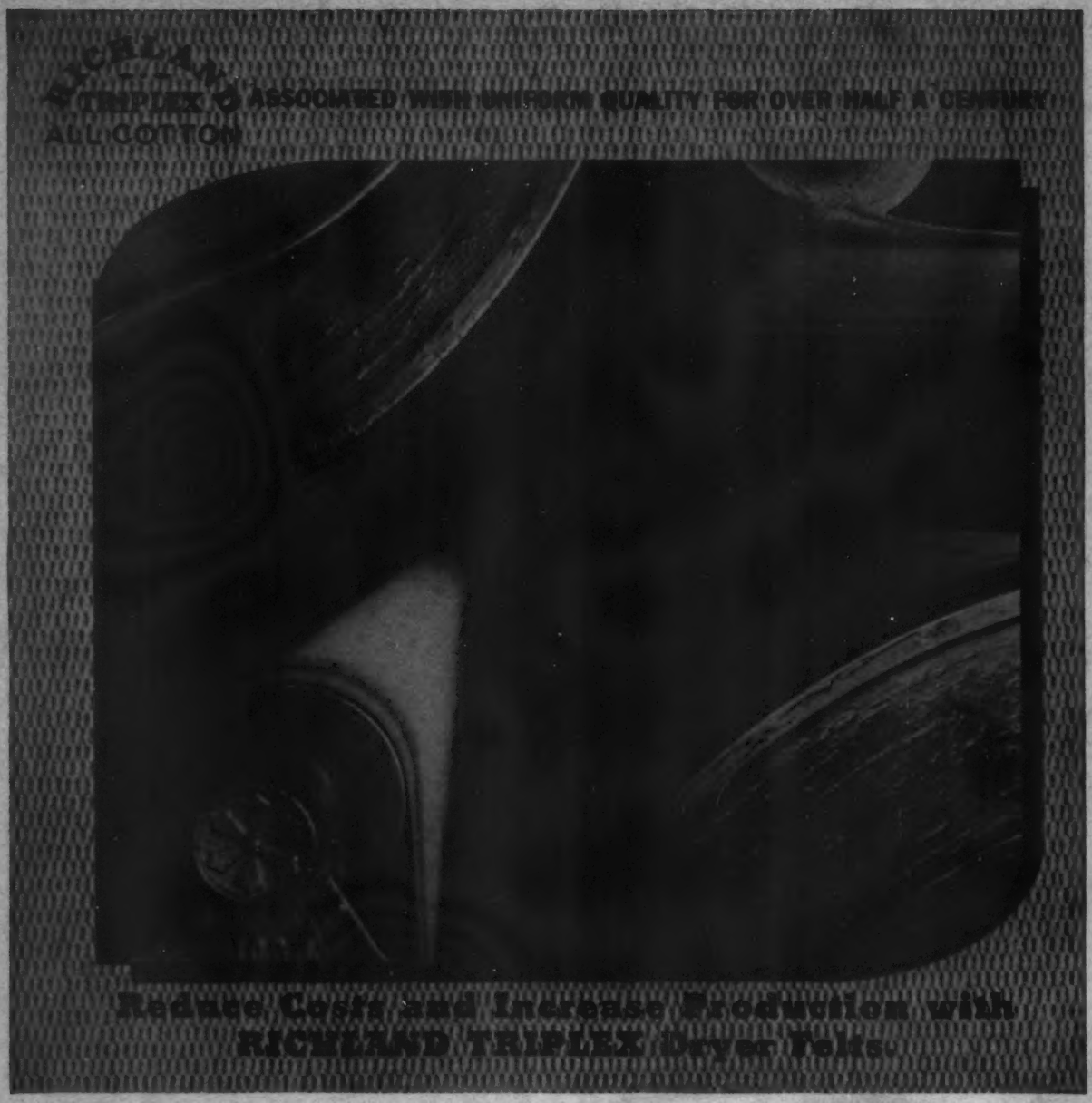

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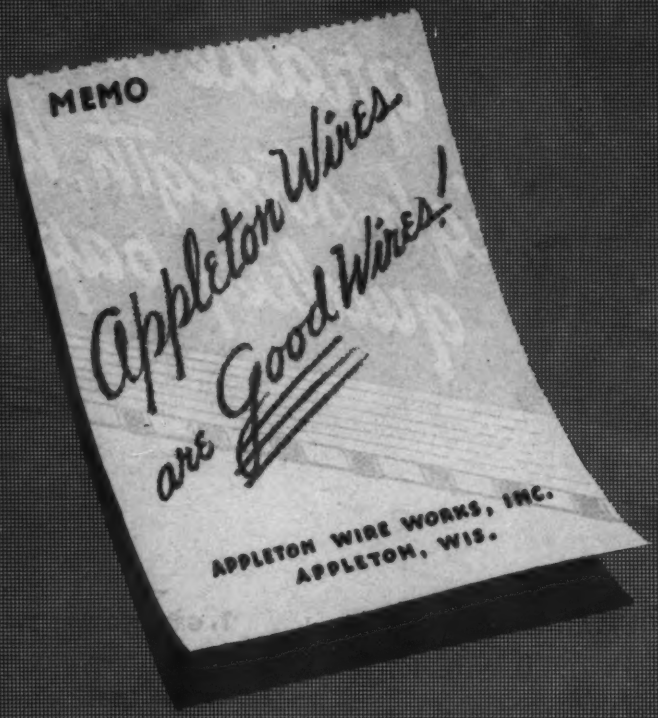
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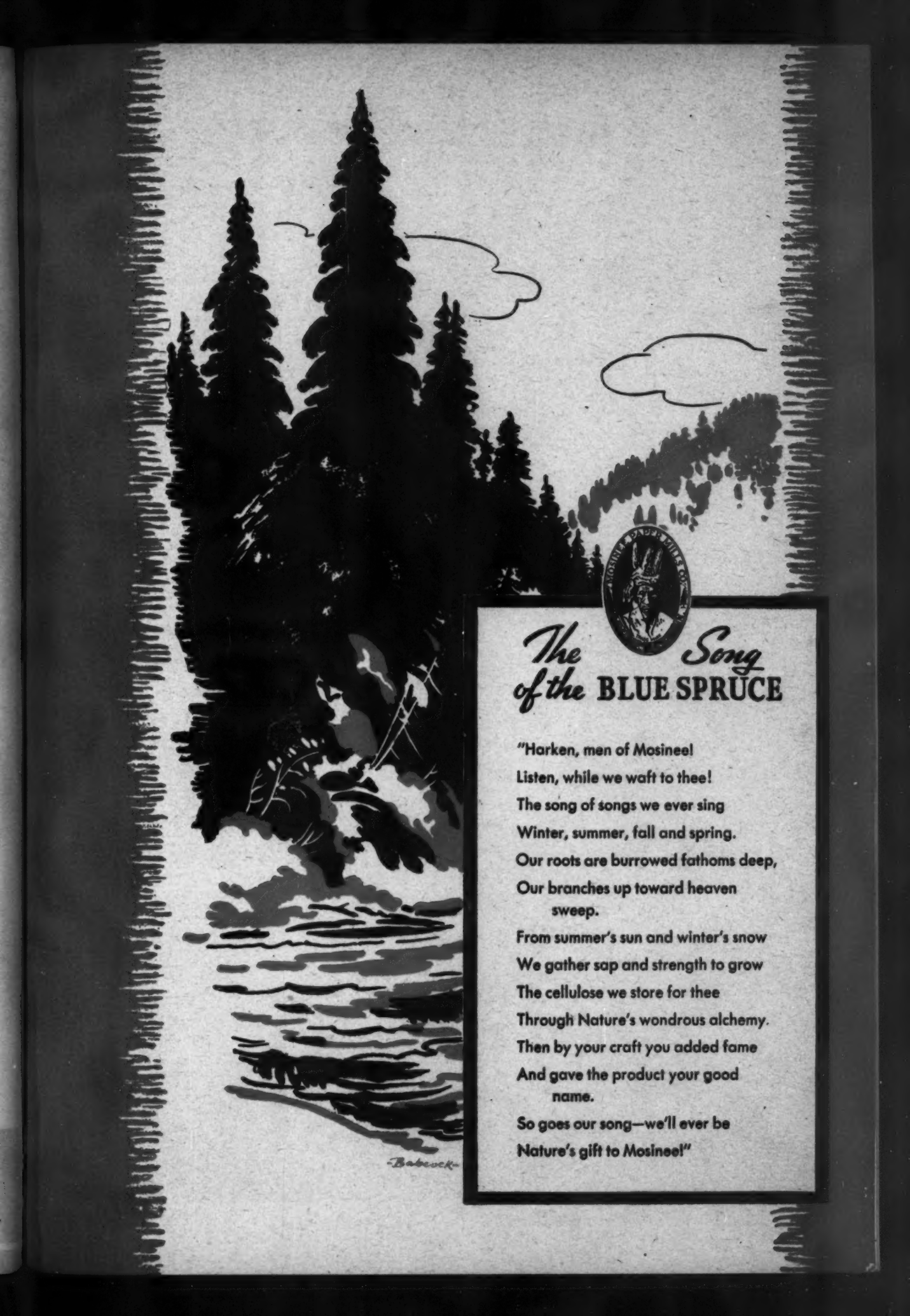
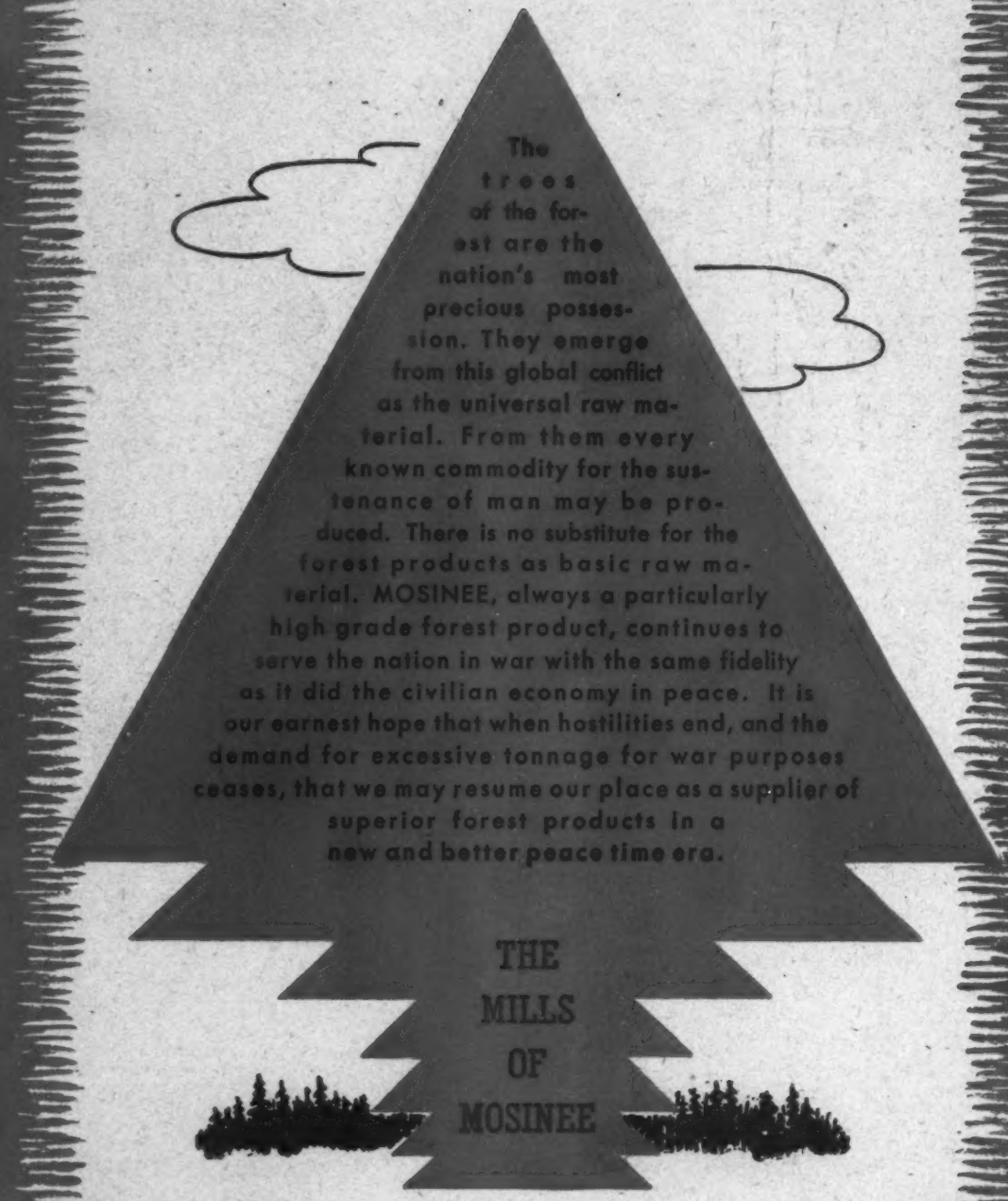


The Song of the BLUE SPRUCE

"Harken, men of Mosinee!
Listen, while we waft to thee!
The song of songs we ever sing
Winter, summer, fall and spring.
Our roots are burrowed fathoms deep,
Our branches up toward heaven sweep.
From summer's sun and winter's snow
We gather sap and strength to grow
The cellulose we store for thee
Through Nature's wondrous alchemy.
Then by your craft you added fame
And gave the product your good name.
So goes our song—we'll ever be
Nature's gift to Mosinee!"


The trees of the forest are the nation's most precious possession. They emerge from this global conflict as the universal raw material. From them every known commodity for the sustenance of man may be produced. There is no substitute for the forest products as basic raw material. MOSINEE, always a particularly high grade forest product, continues to serve the nation in war with the same fidelity as it did the civilian economy in peace. It is our earnest hope that when hostilities end, and the demand for excessive tonnage for war purposes ceases, that we may resume our place as a supplier of superior forest products in a new and better peace time era.
THE MILLS OF MOSINEE

99 Years of Leadership *in making valves for industry*

In a book on Cincinnati, published shortly after the Civil War, the following statement concerning The Wm. Powell Co. appears—"the Company, founded in 1846, manufactures the celebrated "Star" Regrinding Globe Valve, now in use in all parts of the country." Shown at the extreme right is the drawing used in 1865 to get the patent on this valve. The plant in which these valves were being made at that time is shown in the inset.

Today, in modern plant buildings covering many acres, the company is making a complete line of Globe, Angle, Gate, Check, Relief, Y, Non-return and other types of valves in bronze, iron, steel, pure metals and special alloys for corrosion resistance (catalogs on request).

The complete Powell Line of Valves for the Paper Industry includes all types in bronze, iron, steel, pure metals and special alloys for steam, water and all process lines.

Powell Globe, Angle and "Y" Valves can be equipped with the Powell Seat Wiper (patented in 1935)—an ingenious internal regrinding device that assures tight closure of valves handling viscous or gelatinous media or suspensions in solution that precipitate over seat and disc faces. Further particulars will be gladly furnished upon request.

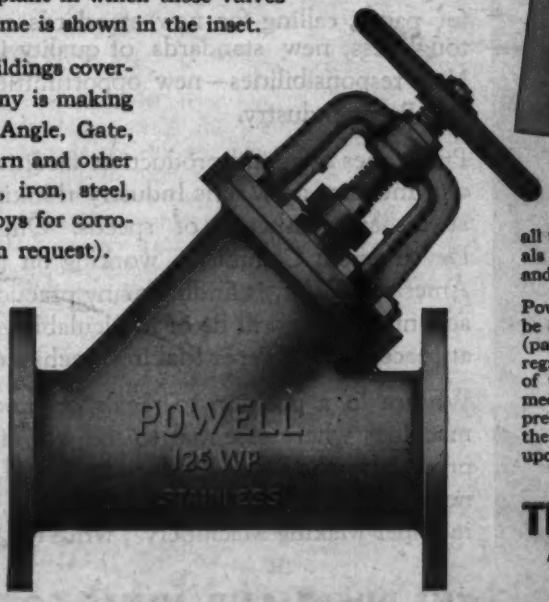


Fig. 1944—Stainless Steel "Y" Valve for 125-pounds W. P. This type of valve provides the straightway full flow area of the Gate valve, plus the throttling feature and easy regrinding and renewability of disc of the Globe valve.

The Wm. Powell Co.
Dependable Valves Since 1846
Cincinnati 22, Ohio

POWELL VALVES

PAPER · · · America's 6th Industry

GUN BARRELS OF PAPER

(NEWS ITEM: *Barrels of AAF rocket guns are made of paper treated with heat-resistant plastic.*)

Barrels of "flying bazookas" installed on Fighter Planes are made of paper. Resin-impregnated paper tubes are hardened in ovens, painted, and assembled in threes for mounting under plane wings. These bazookas are fired by a trigger set in the fighter's control stick and have already wreaked havoc on enemy installations in Europe and Asia.

Asphalt paper for airplane runways . . . Condenser paper for electrical equipment . . . Cloth lined paper for maps . . . Filter paper for aircraft engines . . . New uses for paper, calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

Puseyjones men and production facilities are at War—and Industry at War is Industry thinking and working at hitherto unheard of speeds. Our Research and Development Committee, working on the problems of America at War, is finding many practical and technical advantages that will be of incalculable value to America at peace—to the Paper Making Machinery of the future.

We are in a position to repair or modernize existing machines where essential to the war effort and as approved by the War Production Board . . . If you have not received your copy of our bulletin, "New Features in Paper Making Machinery", write for it today.

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